On a Need-to-Know Basis:

Transactive Memory Processes, Financial Literacy, and Financial Outcomes

ADRIAN F. WARD
JOHN G. LYNCH, JR.

September 1, 2014
Adrian F. Ward is a postdoctoral research associate in marketing and a senior research associate in the Center for Research on Consumer Financial Decision Making at the Leeds School of Business, University of Colorado at Boulder (email: adrian.ward@colorado.edu) and John G. Lynch, Jr, is the Ted Anderson Professor of Free Enterprise in marketing and the Director of the Center for Research on Consumer Financial Decision Making at the Leeds School of Business, University of Colorado at Boulder (email: john.g.lynch@colorado.edu).
ABSTRACT

Many consumers suffer from low levels of financial literacy, and attempts to increase this dimension of consumer expertise via educational interventions are typically unsuccessful. We propose that “transactive memory systems,” in which individuals offload responsibility for knowledge and decision-making to relationship partners, cause some of these apparent deficits in literacy and learning. Using cross-sectional data from consumers in long-term relationships, we show that the distribution of responsibility for financial matters predicts differences in the development of financial literacy over time (study 1). These differences in financial literacy are linked to corresponding differences in both financial decision-making (study 2) and financial information search (study 3). Experimental evidence from a pair-based lab study suggests that the distribution of responsibility between partners causes each partner to develop expertise in areas for which they are responsible, regardless of any differences in initial expertise or ability (study 4). Consumers seem to develop expertise on a “need to know” basis—and offloading responsibility to a relationship partner may eliminate this need.
A husband and wife read the paper with their morning coffee; one turns to the business section, the other to sports. They listen to talk radio on their morning commute; one notices the announcement of an upcoming IPO, the other a new recipe for fruit salad. They shop for a new car; one grills the salesperson on loan terms, the other asks about the safety of the automobiles they consider. Despite subscribing to the same paper, listening to the same radio program, shopping for the same car, and generally having access to the same information—information that may be relevant for decisions now, in the future, or perhaps never—these two individuals interact with their informational environment in very different ways.

In this research, we analyze how these different ways of interacting with the information around them can lead the two members of this couple to accumulate different experiences and areas of expertise over time, to attend to—and fail to attend to—different types of potentially important information, and to be prone to making suboptimal decisions in different areas. We are motivated in this work by research on the woeful state of financial literacy worldwide. Financial literacy is a personal-finance form of consumer expertise, related to the ability to understand and engage in both short-term financial management and long-term financial planning (Remund 2010). In national surveys of US adults, shockingly low percentages can correctly answer elementary questions about credit card use, compound interest, effects of inflation, or properties of stocks and bonds (Lusardi and Mitchell 2011; Lusardi and Tufano 2009)—all crucial areas of knowledge for navigating a complex financial environment. Moreover, financial education interventions have miniscule effects, explaining on average 0.1% of the variation in “good” financial behaviors (Fernandes, Lynch, and Netemeyer, in press).

We conjecture that people tend to be ignorant about money because they think they have it covered—not because they know about money, but because they don’t need to know about
money. People generally pay attention to what they think they need to know, when they think they need to know it. When it comes to finances, almost everyone seems to have an “expert” on call—an uncle who dabbles in day-trading, a family friend who majored in accounting, or a spouse who simply seems confident. And they rely on other people for information, leading to low “share of voice” for any financial education intervention. In this work, we consider how couples use each other as experts, often entrusting just one partner with the bulk of the responsibility for financial matters, and how this distribution of responsibility affects what they know, what they learn, and their ability to make good financial decisions.

Research in consumer behavior suggests that differences in how consumers seek out, attend to, and use information can be explained largely by properties of the individual, such as individual differences in personal interests (Celsi and Olson 1988) or prior knowledge (Alba and Hutchinson 1987); Bettman and Park 1980; Lynch and Wood 2002). Further research suggests that these individual differences between consumers may have serious implications for well-being, particularly in the domain of personal finance. Financial literacy is associated with day-to-day financial management skills (Hilgert, Hogarth, and Beverly 2003), retirement planning and accumulated wealth at retirement (Lusardi and Mitchell 2007, 2011), levels of debt and debt and debt-related anxiety (Lusardi and Tufano 2009; Lusardi, Mitchell and Curto 2010), and additional outcomes related to both financial and holistic well-being (for a review, see Hastings, Madrian, and Skimmyhorn 2012). Consumers may fail to develop financial literacy due to lack of interest (Mandell and Klein 2007), familiarity (Chen and Volpe 2002), or ability (Lusardi, Mitchell, and Curto 2010)—and these individual failures can have serious consequences.

In contrast to this account of the consumer in a (social) vacuum, we propose that consumers’ interactions with information are often determined not by individual differences per
se, but by dynamic processes operating within the context of social relationships. Specifically, we suggest that relationship partners distribute responsibility for information and decision-making within dyadic “transactive memory systems” (e.g., Wegner, Giuliano, and Hertel 1985; Wegner 1986). This distribution of responsibility both (1) determines the relationships between each individual and the informational environment and (2) leads each partner to develop specialized (or “differentiated”) domains of expertise over time—areas of knowledge that are unique to that individual. As a result, each partner reaps the rewards of the other’s expertise without needing to dedicate the time or resources necessary for developing expertise in these domains him- or herself.

Remember our husband and wife, each interacting with the informational environment in a completely unique way? Now consider these two not as independent “information processing systems” (Newell and Simon 1972), but as relationship partners—as two halves of a transactive memory system. By combining their specialized domains of expertise, these transactive memory partners are capable of accomplishing what neither could alone. Together, they can know about business and sports, lease terms and vehicle safety ratings. They can handle the cognitive load imposed by a world of responsibilities, decisions, and seemingly limitless information by simultaneously reducing the demands placed on either partner (each partner is only responsible for developing expertise in a subset of all possible domains) and increasing the resources available to each partner (each partner can access the other’s expertise when making decisions—or offload responsibility for decision-making in a particular domain entirely).

Although distributing responsibility for expertise may be beneficial within the bounds of a transactive memory system, depending on one’s partner to handle entire domains of expertise may prove costly if and when this system breaks down. Just as Ariely (2000) found that giving
up control of information flow makes processing easier but makes one learn less over time, giving up control over information and decision-making within transactive memory systems may create cognitive deficits over time as each partner offloads responsibility for some domains to the other. Here, we study the tendency of relationship partners to develop differentiated domains of expertise over time, as well as the downstream consequences of this differentiation—particularly for the development of financial literacy, the ability to make optimal financial decisions, and the willingness to engage in financial information search.

THE DYNAMICS OF EXPERTISE: CONNECTING INDIVIDUALS AND DYADS

We conceptualize expertise as a combination of declarative knowledge (information stored in memory) and procedural knowledge (skills supporting the efficient use of this information) that enable “the ability to perform [domain]-related tasks successfully” (Alba and Hutchinson 1987). Expertise often improves task performance—but the development of expertise comes at a cost.

One of the most well-studied topics in individual cognition and decision making is the use of adaptive strategies to cope with a “mismatch between difficult decision task[s] and limited processing capabilities” (Bettman, Johnson and Payne 1991). The environment is full of potentially important information, but individuals’ ability to comprehend and use this information is consistently constrained by cognitive systems that are capable of attending to and processing only a small amount of the information available at any given time (e.g., Payne, Bettman, and Johnson 1988; Newell and Simon 1972). This may lead consumers to use cognitive resources on a “need to know” basis, where consumers’ approaches to tasks are
determined largely by an estimation of how important this task might be for their current and future well-being, balanced by the resources necessary for accomplishing the task in different ways (e.g., decision-making based on heuristics v. more thorough consideration and search). Consumers may intuitively cope with the mismatch between task demands and cognitive abilities by making these resource allocation decisions as environmental demands are made salient (i.e., when a particular decision needs to be made) (Dickson and Sawyer 1990; Goldstein and Gigerenzer 2002). The strategies used by consumers to manage information when making particular decisions contribute to the dynamic development of expertise over time (Alba and Hutchinson 1987; Ariely 2000; Maheswaran, Sternthal, and Gurhan 1996).

We suggest that transactive memory systems represent one particularly pervasive strategy for navigating the cognitive demands of daily life. Whereas an individual-level perspective suggests that consumers must often weigh the benefits of expertise against the costs of developing this expertise, transactive memory systems allow consumers to gain the benefits of expertise without incurring any cognitive costs. When consumers distribute responsibility for information and decision-making within transactive memory systems, each partner develops expertise in some domains and trusts the other to fill in the gaps by developing expertise in others. This distribution of responsibility within transactive memory systems does not necessarily change how expertise develops within each individual, but it may change what domains of expertise are developed; in other words, it changes consumers’ intuitions about what they “need to know.” When consumers trust that someone else is responsible for a particular domain, the environmental demands that would typically lead to the development of expertise in this domain—or at least the realization that one lacks expertise—may no longer be salient to this individual. Over time, the connection between responsibility, demand salience, and the
development of expertise may create a sense of cognitive interdependence in which each partner thinks, remembers, and makes decisions for the other (e.g., Davis 1973; Agnew et al. 1998).

In the following sections, we tie familiar concepts from the literature on memory, information search, and expertise in individuals into a transactive memory framework, drawing parallels and identifying distinctions between these cognitive functions at the individual and dyadic levels.

Experience and Expertise in Individual Consumers

One way in which individual consumers may cope with the mismatch between task demands and cognitive abilities is by placing information into “external memory” rather than internal, or long-term, memory (e.g., Bettman 1979; Harris 1978; Newell and Simon 1972; Simon and Newell 1971). External memory within the context of individual consumer decision-making typically refers to memory aid devices created by the consumer—for example, to-do lists and reminders (Bettman 1979; Fernandes 2013). These external memories reduce the cognitive demands experienced by consumers by allowing them to replace content knowledge (“I know what features to look for when choosing a new car”) with location knowledge (“I know where to find my list of important features”). Although internal and external memory are often functionally equivalent for purposes of providing access to decision-relevant information (e.g., Wegner et al. 1985), only information stored internally (i.e., in long-term memory) can be used for purposes of interpreting and integrating new information into a continuously developing accumulation of understanding (e.g., Alba and Hasher 1983)—that is, for developing expertise (e.g., Chi, Glaser, and Rees 1981).
When consumers are faced with a problem or decision, they generally try to address these issues using preexisting expertise because it is often easier to rely on memory than to look outward and scour the environment for relevant information (Bettman 1978). However, when prior knowledge is insufficient to address the task at hand, they may experience an “interrupt,” or realization that their initial strategy—in this case, relying on prior knowledge to solve a new problem—is unlikely to be successful (Bettman 1979; Simon 1967). When this is the case, consumers may turn to external search in order to make up for any deficits in prior knowledge.

The literature on the relationship between prior knowledge and information search shows two primary patterns. In general, prior knowledge about a product class increases search, presumably via development of schemas used to interpret and integrate new information. In contrast, prior knowledge of the specific choice alternatives within a given domain or product class often decreases search (Punj and Staelin 1983; Urbany, Dickson, and Wilkie 1989).

Barring extensive knowledge about specific alternatives within a choice set, expert consumers may also be more willing to engage in search as a result of a more favorable cost/benefit ratio: the ability to distinguish between relevant and irrelevant information increases the efficiency (and decreases the cost) of information search, and the ability to process and encode this information increases the benefits of search by increasing the chance that new information will be integrated with prior knowledge and used for the task at hand (Johnson and Russo 1984). Consumers who lack expertise in a domain incur higher costs and enjoy lower benefits from information search (Brucks 1985)—perhaps because their lack of expertise prevents them from engaging in efficient search (Johnson and Russo 1984).

As consumers continue to gain experience in a given domain—solving problems, making decisions, and/or engaging in information search—they increase their expertise in that domain
improving future task performance (Alba and Hutchinson 1987). At each stage of the process, prior knowledge serves as a foundation on which to build ever-increasing levels of expertise, and low levels of prior knowledge—whether the result of intentional offloading to external memory or mere happenstance—seem to prevent this process from ever getting off the ground.

Responsibility and Expertise within Dyadic Transactive Memory Systems

Transactive memory systems shift the onus for handling myriad responsibilities and decisions presented by day-to-day life from the individual to the dyad. The ability to remember, process, and use information is determined not by the expertise of either individual, but by the collective expertise of the system as a whole. The cognitive benefits of this shift from the individual to the dyad are greatest when each partner develops “differentiated” domains of expertise—that is, sets of knowledge and skills that are uniquely possessed by one partner (e.g., Hollingshead 2001; Wegner et al. 1985). In many domains, partners in transactive memory systems may benefit from expertise possessed by the dyad as a whole, but neither individual necessarily needs to develop this expertise for him- or herself—and development of redundant expertise in these areas by both partners may be cognitively inefficient. When this is the case, partners may distribute responsibility for information and decision-making between themselves, offloading responsibility for some domains and assuming responsibility for others. Over time, this distribution of responsibility affects both the expertise of the dyad—together, partners can know and do more than either partner could have alone—and the expertise of each individual—each partner develops specialized expertise in some domains, but lets other domains go undeveloped.
We see these role divisions in the literature on consumer decision-making within the family (e.g., Davis 1970; Davis 1971; Davis and Rigaux 1974; Park 1982). Other work points to a shift in responsibility for financial decision-making during the early years of marriage such that jointly managed financial tasks tend to become the sole (or at least primary) responsibility of just one partner over time (Ferber and Lee 1974). We believe that the intra-household differences detailed in these areas reflect transactive memory systems at work; however, prior research has never explicitly explored the effects of distributed responsibility on cognitive efficiency or the development and differentiation of expertise over time.

In transactive memory systems, each partner uses the other as a form of external memory. Like more traditionally acknowledged external memory devices (e.g., to-do lists, spreadsheets, journals), human sources of external memory reduce the cognitive demands experienced by consumers by allowing them to replace content knowledge with location knowledge. In this case, “I know who to ask” replaces “I know where to look.” Offloading responsibility for a given domain to another person prevents the individual from developing expertise in that domain. This inhibition of expertise may be even stronger when using relationship partners as external memory than if using some non-human external memory like a notepad. Human external memory does not necessarily need to be revisited by the offloader in order to be useful—each relationship partner can process information and make decisions in his or her domains of expertise without the other partner even being aware of it. When consumers use relationships partners as forms of external memory, they create a situation in which shared outcomes are often produced by independent actions.

Relationship partners must agree on a system of distributed responsibility in order to ensure that information doesn’t go unnoticed and tasks don’t go unfinished. The distribution of
responsibility within transactive memory systems generally occurs intuitively and automatically, and is primarily guided by relative differences in access to information and expertise (Wegner, Erber, and Raymond 1991). However, “circumstantial responsibility” may often override any differences between partners in access to information or expertise, such as when one partner is not necessarily any more knowledgeable or skilled in a given area, but simply has more free time to devote to learning about or handling tasks within that domain (Giuliano and Wegner 1985).

When it comes to the development of expertise, the key difference between individuals and dyads is not necessarily how expertise is developed, but what expertise is developed. For each partner within the system, the dynamics of developing expertise are similar to those at play for individual consumers. However, the distribution of responsibility between partners may determine the amount of experience each partner gains in each domain, and these differences in experience lead to differentiated areas of expertise. When members of a transactive memory system are faced with a task or decision, their first question may not be “Do I know this?” (that is, “Is my current level of expertise sufficient?”), but “Do I need to know this?” (that is, “Am I responsible for expertise in this domain?”). As the distribution of responsibility continues to guide experiences over time, each partner will often develop expertise in some domains while ignoring others. As a result, the collective expertise of the system as a whole will typically be greater than what could be achieved by any one individual. However, the expertise of each partner will be highly variable across domains, Compared to individuals not in transactive memory systems, each partner may have high levels of expertise in domains of personal responsibility, but exceptionally low levels of expertise in domains that have been habitually ignored over the course of the relationship.
The differentiation of expertise within transactive memory systems typically increases the efficiency and expertise with which partners process information, make decisions, and generally navigate the demands of day-to-day life. This is particularly true when these demands represent “disjunctive” task structures—that is, tasks where the dyad as a whole can arrive at the best answer even when only one partner knows this answer (cf. Kerr and Bruun 1983). However, transactive memory systems rarely last forever. A partner may be inconveniently out of town for a week, leaving the offloader to cope. More permanently, death, disease, cognitive impairment, or simply the fading of romantic interest may lead to the breakdown of a transactive memory system. The loss of one’s partner may leave each newly-independent individual not just with heartbreak, but with sizable and serious gaps in expertise (e.g., Wegner et al. 1985).

Perhaps more alarmingly, the breakdown of transactive memory systems may also impair the ability to develop new expertise in long-ignored domains. When partners habitually offload responsibility for information and decision-making in a given domain, they may begin to lack familiarity with that domain at a general level. This lack of familiarity may reduce willingness to engage in information search within that domain (e.g., Brucks 1985; Punj and Staelin 1983; Urbany, Dickson, and Wilkie 1989), and any information search they do perform is likely to incur high costs and yield low benefits (Johnson and Russo 1984). As a result, newly-independent transactive memory partners may be both unwilling and unable to engage in information search as a way of repairing deficiencies in expertise.

The qualities that make transactive memory systems adaptive from the inside—when partners combine their differentiated areas of expertise to solve problems as a dyadic unit—may lead to nontrivial impairments on the outside—when these systems break down and newly-independent partners are forced to address the demands of day-to-day information processing
and decision-making as individuals. Although each partner in a transactive memory system may enter the relationship with similar levels of expertise, the distribution of responsibility within this system may cause differentiation of expertise over time, such that each partner gains high levels of expertise in some domains but allows expertise in other domains to remain stagnant—or even decay. When suddenly forced to take responsibility in a domain after years of habitually offloading this responsibility to a trusted partner, individuals may suffer from both low levels of existing expertise and deficits in the ability and willingness to increase expertise through information search.

**OVERVIEW OF THE PRESENT RESEARCH**

We propose that transactive memory processes may affect the development of financial literacy over time, particularly for consumers in long-term relationships. Distributions of financial responsibility may shape each partner’s future experiences with financial information and decision-making. Much like the husband and wife in our first scenario, one partner may attend to, seek out, and generally interact with financial information much more than the other, despite each partner potentially having equal access to this information. Over time, these differences in responsibility—and subsequent differences in engagement with financial information and tasks—may lead to the development of financial literacy for one partner, but not the other. These differences in financial literacy may in turn lead to differential outcomes for partners when they are forced to make independent financial decisions. Consumers who generally take responsibility for financial decision-making may tend to make better decisions overall, and use information search to improve decision-making when they are unsure of their
ability to meet task demands alone. Consumers who tend to offload this responsibility, on the other hand, may tend to both make sub-optimal financial decisions and fail to engage in information search as a corrective measure.

In study 1, we use cross-sectional data from dating, cohabitating, and married participants to examine the differentiation of financial literacy for partners of varying relationship length. We show that differences between partners in responsibility for financial decision-making predict differences in financial literacy over time. Relationship length is associated with increased financial literacy for partners who take responsibility in the financial domain but not for partners who offload this responsibility. In study 2, we explore the implications of this differentiation in expertise for decision-making. We show that differences in financial literacy created by distributions of responsibility over time predict decision quality in an investment choice task. In study 3, we investigate whether or not consumers who lack financial literacy as a result of habitually offloading information in this domain will be willing to repair these deficits by engaging in information search. We show that financial literacy is positively associated with information search prior to an incentive-compatible test of financial knowledge and decision-making, suggesting that those who need this information the most may be the least likely to seek it out.

Our first three studies primarily rely on regression analyses of cross-sectional data; we exchange this approach for a lab-based experiment of problem-solving in pairs in study 4. In this study, we test whether the differentiation of financial literacy between relationship partners may simply be an effect of the “enrichment hypothesis” that those who already know more will tend to learn more over time (e.g., Chase and Simon 1973; Johnson and Russo 1981, 1984). We find in studies 1-3 that those who take on financial responsibility within a partnership do not differ
from those who offload this responsibility in financial literacy when they begin their relationships, but differentiate over time. In study 4, we provide evidence that the distribution of responsibility between partners based on randomized feedback leads to differentiated expertise, regardless of any incoming differences in expertise or ability.

**STUDY 1: FINANCIAL LITERACY ON A “NEED TO KNOW” BASIS**

When consumers distribute responsibility for information and decision-making in various domains, they may be exposed to information in these domains on a “need to know” basis. Consumers who take on high levels of responsibility in a domain are often tasked with understanding information and making decisions with implications for the well-being of both partners. A high “need to know” may lead these consumers to gain experience with this domain over time, and this experience may lead to the development of expertise. Consumers who offload most of the responsibility within a domain, on the other hand, may feel that they do not need to know much about this domain at all. This low “need to know” may discourage these consumers from gaining experience within this domain, and continued lack of experience may cause expertise to stagnate or decay.

In study 1, we use cross-sectional data from dating and married couples to examine the implications of the distribution of financial responsibility within relationships for the development of financial literacy over time. We use two main factors—a self-report measure of responsibility for financial decision-making and relationship length—to predict financial literacy, controlling for a battery of demographics. We expect that the gap between relationship partners
in financial literacy will become increasingly pronounced over the course of the relationship as partners accumulate different levels of experience on a “need to know” basis.

Method

**Participant Recruitment.** In studies 1, 2, and 3, we recruited dating, cohabitating, and married United States residents using the Amazon Mechanical Turk (mTurk) worker recruitment and payment system. Amazon mTurk provides a more diverse sample than typical lab-based populations, while maintaining similar levels of reliability (e.g., Buhrmester, Kwang, & Gosling, 2011). In correlational studies like those we report, the sample heterogeneity provided by an online sample improves statistical power and avoids range restriction. No participant was included in more than one study.

**Participants.** Our initial data collection for this study yielded 475 responses. However, we trimmed these responses based on our primary interest in the effects of transactive memory processes within relationships; we did not analyze responses from 143 single participants or from 60 participants in relationships who reported that “[my partner and I] have separate finance and do not make any financial decisions affecting both of us.”

Our final sample consisted of 272 individuals currently dating, cohabitating with, or married to a partner with whom they shared financial resources and/or responsibilities (151 female, 124 male; $M_{\text{age}} = 34.52$). Participants represented a wide range of relationship types: 125 were married, 70 were unmarried but cohabitating, and 14 were engaged. Despite filtering out respondents who indicated that they did not share any financial resources or responsibilities, we were able to collect data spanning a wide range of relationship lengths, ranging from just
over a month to 49 years ($M = 9.1$ years). Our final sample represented participants from a wide variety of economic, educational, ethnic, and regional backgrounds; most importantly for our purposes, this sample also captured a wide range of types and lengths of relationships.

**Procedure.** Participants first indicated their current relationship status and a set of relevant measures of relationship length (e.g., total relationship length, cohabitation length, marriage length); all participants who indicated that they were in relationships provided an estimate of total relationship length. Next, participants who indicated that they were currently in relationships were asked to think about the distribution of financial responsibility within their relationship and answer the question “How responsible is each member of your relationship for making financial decisions?” They used a 100-point sliding scale with anchors indicating “I am completely responsible” and “My partner is completely responsible.” Our primary interest was in the interaction of relationship length with responses to this measure of relative financial responsibility within the relationship, as well as the simple effects of these two variables.

After answering a brief set of questions related to self-perceived financial literacy and need for financial expertise, participants completed our key dependent variable: a 13-item assessment of financial literacy developed to measure “concepts of personal finance with respect to borrowing/debt and saving/investments that lead to better lifetime financial decision-making” (Fernandes, Lynch, and Netemeyer 2014). Finally, participants completed a demographics questionnaire assessing age, ethnicity, gender, education, income, and other potential covariates of financial literacy.
Results

Overall Regression Analysis. We analyzed financial literacy scores in OLS regressions as a function of relationship length, responsibility distribution, and the interaction of these two terms, as well as factors representing age, gender, ethnicity (dummy coded), education (dummy coded), salary, and a contrast representing whether or not one’s partner works and/or contributes to shared finances. Relationship length was coded in years; division of responsibility was coded on a 100-point scale ranging with key values of -50 = “My partner is completely responsible”, 0 = equal responsibility, and + 50 = “I am completely responsible.” The interaction of responsibility and relationship length was calculated by multiplying these two terms.

Our overall regression model was significant, $F(20,251) = 10.12, p < .0001$, with an $R^2$ value of .446. Note that the effects associated with our key variables—financial responsibility, relationship length, and the interaction of these two terms—are robust across a wide array of models both including and excluding numerous covariates (see appendix 1A for an abbreviated model comparison) and using various transformations of relationship length to account for any tapering of the relationship between relationship length and financial literacy (e.g., log transformed years, quadratic representations of relationship length).

Although our final model did not reveal any troubling multicollinearity associated with our “relationship length” measure (VIF = 2.06), we also tested alternate models substituting participant age for relationship length in order to address potential concerns stemming from the conceptual relationship between these two variables. This model comparison, shown in appendix 1B, indicates that financial literacy is better predicted by a model based on the interaction of relationship length and financial responsibility ($R^2 = .446$) than by an otherwise
identical model based on the interaction of age and financial responsibility \((R^2 = .397)\). We report the model specification that offers the best combination of parsimony, interpretability, and explanation of variance. This model specification will also be used in studies 2 and 3.

[Insert table 1 about here]

[Insert table 2 about here]

*Main Effects and Interactions.* Regression coefficients for all variables in study 1 are presented in table 1; these variables were used in all further analyses. Regression coefficients for the simple main effect of relationship length at responsibility = 0 (i.e., equal division), the simple main effect of financial responsibility at relationship length = 0, and the interaction effect of responsibility X relationship length for studies 1, 2, and 3 are presented in table 2.

This regression analysis revealed a significant positive simple effect of relationship length on financial literacy \((B = .051, t(251) = 2.43, p = .016)\), indicating that longer relationships were associated with higher levels of financial literacy when the division of responsibility was coded 0 (equal). Because age was also included in the regression model, this result implies that being in a relationship has positive implications for financial expertise over time over and above any positive effects that might be associated with gaining expertise over the lifespan; the effect of age was not significant, \(p = .70\).

There was no simple main effect of financial responsibility on financial literacy \((B = -0.005, p = .60)\). This suggests that partners at the very beginning of a relationship (i.e., at a relationship length of 0) do not necessarily distribute financial responsibility according to
preexisting levels of financial expertise. The partner who knows most at the beginning of a relationship might not necessarily become the one who “needs to know.”

We expected—and found—a significant effect of the interaction between responsibility for financial decision-making and relationship length on financial literacy ($B = .0033$, $t(251) = 3.87$, $p < .001$). This suggests that the effects of taking on or offloading financial responsibility within a relationship emerge over the course of the relationship as partners fulfill their specific roles, gain experience in their domains of responsibility, and have limited experience in areas for which they are not responsible. Together with the lack of a simple main effect of financial responsibility, this interaction effect suggests that the distribution of financial responsibility within a relationship may cause relationship partners to develop different levels of financial expertise over time.

This constellation of results—particularly the significant effect of the responsibility X relationship length interaction, the lack of a simple main effect of financial responsibility, and the failure of a responsibility X age interaction to predict financial literacy in alternate models (appendix 1B)—illuminates an important conceptual point: the development of financial expertise seems to depend upon the amount of time an individual spends within a given financial role.

Figure 1 shows the differences in financial literacy associated with taking full responsibility for financial decision-making, sharing financial responsibility equally, and completely offloading responsibility for the financial domain to a relationship partner as a function of relationship length.

[Insert figure 1 about here]
**Floodlight Analyses.** Next, we conducted a set of “floodlight” tests (Spiller et al. 2013) to further illuminate the relationship between financial responsibility, relationship length, and financial literacy; the results of these tests, as well as regression slopes for three key levels of financial responsibility (100% responsibility, equal responsibility, 0% responsibility) are presented in figure 1. Our first test indicated that taking on higher levels of financial responsibility is associated with increases in financial literacy for all relationship lengths past the Johnson-Neyman point of 5.51 years.

Second, being in a longer relationship significantly increased financial literacy for all those who were at least 47.3% responsible, and significantly decreased financial literacy for all those who were less than 8.4% responsible. This suggests that partners do not necessarily have to be “in charge” in order to experience increases in financial literacy over the course of a relationship—they simply have to be involved roughly equally. On the other hand, relationship partners below the Johnson-Neyman point of 8.4% of responsibility for the financial domain actually know less the longer they are in the relationship.

Discussion

The results of study 1 suggest that when transactive memory partners distribute responsibility for financial matters, differences in the “need to know” may create different trajectories for the development of financial expertise over the course of a relationship. The significant effect of the responsibility X relationship length interaction, combined with the lack of a simple effect of responsibility at a relationship length of 0, suggests that the initial
distribution of financial responsibility within a relationship may not be determined by preexisting levels of financial literacy. In other words, who knows more at the start of the relationship may not always be who ends up with the “need to know”—but this need to know seems to drive the development of knowledge from that point forward. This pattern is consistent with research suggesting that the distribution of financial responsibility within relationships often emerges early in relationships as partners shift from joint decision-making to distributed domains of responsibility (e.g., Ferber and Lee 1974; Wolgast 1958), as well as evidence that this distribution of responsibility is often determined by factors such as sex-role orientation, income share, and free time (e.g., Bernasek and Bajtelsmit 2002; Bobinski and Assar 1991; Rosen and Granbois 1983).

Our finding suggest that a partner does not necessarily need to be completely responsible for financial decision-making in order to experience increases in financial literacy over the course of a relationship—he or she simply needs to have an equal say. The simple main effect of relationship length on financial literacy when partners indicate that they equally share financial responsibility is positive and significant. We find this to be true for all individuals with 47.3% or more of the responsibility for financial decision-making. This positive association with financial literacy effect is linked to time spent in a relationship (i.e., relationship length), not time per se (i.e., age); there is something special about sharing the “need to know” with a partner.

**STUDY 2: GOING SOLO WHEN MAKING FINANCIAL DECISIONS**

Consumers may be forced to make independent decisions when separated from their partners for a weekend or for a lifetime. Their ability to process information efficiently and
choose wisely may be affected by the extent to which they relied on these partners for expertise in a given domain.

The results of study 1 suggest that there may also be a dark side to sharing financial responsibility within relationships; when partners did not have roughly equal responsibility for financial matters, they failed to develop financial literacy over the course of the relationship. It may be that when people offload financial responsibility too much—when they believe that their personal “need to know” is minimal—their ability to make optimal financial decisions will be impaired if and when they need to make these decisions on their own.

In studies 2, we investigate the potential effects of losing access to one’s transactive memory partner. We do this by asking people in relationships to “go solo” and engage with the financial domain on their own.

In study 1, we showed the effects of role division and relationship length on financial knowledge. In study 2 we explore how these factors affect investment choice. Investment choice represents a real-world challenge for many consumers, perhaps particularly for those who are faced with the prospect of independently planning for their financial futures after relying on a partner to handle financial responsibilities for many years. Selecting and participating in mid- to long-term investments can help people prepare for their financial futures, but research indicates that many people have trouble understanding and choosing between even radically simplified investment alternatives (e.g., Chater, Huck, and Inderst 2012). We expect that these difficulties will be exaggerated for individuals who have given up significant amounts of financial responsibility for significant amounts of time, and may be ameliorated for those who have taken on this responsibility over time.
Method

Participants. As in study 1, our sample was comprised of dating and married US citizens who self-reported that they shared financial resources and/or responsibilities within their current relationships. Our sample for this study consisted of 191 individuals (110 female, 81 male; $M_{age} = 33.71$); 107 were married, 30 were cohabitating, and 17 respondents were engaged. The mean relationship length for this sample was 8.93 years.

Procedure. After reporting relationship-related demographics and completing a financial literacy assessment (as in study 1), participants were presented with an investment choice task modeled after Chater, Huck, and Inderst (2012).

This task consisted of ten separate investment decisions. Each decision consisted of allocating a hypothetical $10,000 between two provided five-year investment funds; participants were told that they could put all $10,000 in either fund or distribute the money between the two funds however they saw fit. We ensured incentive compatibility by telling participants that the returns “earned” as a result of their investment choices would be converted into bonus pay for the study.

The investment alternatives we presented to participants were significantly less complex than those typically encountered by consumers seeking to make actual investments; however, settling on an optimal distribution of funds between the alternatives was certainly far from easy. Chater, Huck, and Inderst 2002, using a similar investment choice task with a multinational sample, found that the total amount of funds invested optimally across all 6,000 participants in their study was only 55.9%. Each pair of investment alternatives was constructed such that the two funds differed on no more than three dimensions: rate and source of returns (e.g., fixed rate
returns v. returns tied to price fluctuations in the stock market); the existence and type of set-up fees (e.g., a set-price fee v. a percentage of the amount allocated to that fund); and the existence and type of annual management fees (e.g., a set-price fee v. a percentage of the value of the fund). Additionally, the simplified structure of each alternative eliminated the advantages of diversification; the optimal decision within each choice set was always to invest the entire $10,000 into one of the two funds. See figure 2 for a representative example of the choice alternatives presented to consumers.

[Insert figure 2 about here]

Although many financial domains preclude making claims about what is “optimal” for any particular individual, our particular task allows for such claims. All investment options had a set five-year period (eliminating concerns about preference for money now v. in the future) and all investments were made using a combination of hypothetical principal (eliminating concerns about potential financial constraint associated with contributing funds to investment accounts) and real returns (ensuring incentive compatibility). The optimal decision within each set of investment alternatives was to allocate all $10,000 to one of the two funds. We calculated the percentage of funds that each participant allocated to the dominant alternative within each choice set and used the total proportion of funds invested optimally across all ten choice sets as our operationalization of financial decision-making ability. Our final measure of financial decision-making ability was on a 0 to 100 scale, with 0 indicating 0% of funds invested optimally and 100 indicating 100% of funds invested optimally.
Results

**Financial Literacy.** As noted in Table 1, we replicated all the key findings from study 1 with respect to the interaction of financial responsibility and relationship length. In addition, we replicated the finding of no significant effect of financial responsibility at year zero and the finding that financial literacy increased with financial responsibility for relationship lengths higher than the Johnson-Neyman point of 4.6 years. Financial literacy increased with relationship length for those more than 50.6% responsible for financial affairs – similar to study 1. The only exception to study 1 was that the tendency for those low in responsibility to become less financially literate with increasing relationship length was not significant.

**Investment Allocations.** We assessed financial decision-making ability in terms of the proportion of funds invested optimally across all ten pairs of investment alternatives. We first conducted an OLS regression predicting this measure using the same factors used to predict financial literacy both here and in study 1. This regression was significant, $F(21,168) = 2.16, p = .004$, with a $R^2$ value of .212. There was a significant effect of the responsibility X relationship length interaction on decision-making ability ($B = .013, t(168) = 2.72, p = .007$), such that the longer the relationship, the greater the simple effect of role division on optimality of decisions. We did not find simple main effects for either responsibility at year 0 ($B = -.08, p = .20$) or relationship length for those sharing responsibility equally ($B = .16, p = .24$). The lack of a main effect of relationship length when financial responsibility is equally distributed between partners indicates a difference between the development of general financial literacy and the ability to make optimal financial decisions. Financial literacy improves over time simply as a function of being in a relationship for those sharing responsibility equally; decision-making does not.
Next, we conducted a set of floodlight tests to further investigate the effects of the interaction of responsibility and relationship length on the ability to make optimal financial decisions. Our first test indicated that taking on higher levels of financial responsibility is associated with increases in decision-making ability for all relationship lengths past the Johnson-Neyman point of 13.03 years. Our second test indicated that being in a longer relationship significantly increased decision-making ability for all those who were at least 59.28% responsible, and significantly decreased decision-making ability for those who were 0% responsible. This suggests that relationship partners who offload responsibility for the financial domain entirely will not only fail to develop financial decision-making skills while in a relationship, but will actually get worse at making financial decisions the longer they are in the relationship.

*Mediated Moderation.* These independent analyses of financial literacy and decision-making ability suggest that the distribution of financial responsibility within relationships affects both the accumulation of financial expertise and the ability to make financial decisions, but they do not indicate how these two outcomes might be related. We hypothesized that financial literacy would mediate the effect of the financial responsibility X relationship length interaction on financial decision-making ability. We conceptualized this relationship using a mediated moderation model in which the indirect effect of financial responsibility on financial decision-making is moderated by relationship length, and this moderated relationship is routed through the mediator of financial literacy (figure 3).

[Insert figure 3 about here]
We used PROCESS (Hayes 2013) to test this pattern. The results of this analysis showed a significant effect of the interaction of financial responsibility and relationship length on financial literacy ($B = .002, t(168) = 2.31, p = .02$), which in turn positively influenced the quality of financial decision-making ($B = 2.20, t(167) = 5.39, p < .001$). This indirect effect of the financial responsibility X relationship length interaction on decision-making through financial literacy ($0.0044, 95\% CI: .0011 \text{ to } .0091$) reduced the highly significant total effect of this interaction on decision-making ($b = .013, t(168) = 2.72, p = .007$) to a marginally significant direct effect ($b = .009, t(167) = 1.94, p = .054$). These results suggest that the distribution of financial responsibility within relationships may affect the domain-general skills associated with financial literacy, and these domain-general skills may in turn affect the ability to make optimal choices on specific financial decision-making tasks.

Discussion

These results suggest that differences in financial literacy associated with distributing responsibility for financial matters over the course of a relationship may affect each partner’s ability to make optimal financial decisions when “going solo.” It may seem unsurprising that distributing responsibility for making financial decisions within the context of a relationship—and consequently shaping exposure to and experiences with financial matters—affects consumers’ ability to make optimal financial decisions when removed from this relational context. However, the broader picture is troubling: although sharing the “need to know” may improve relationship partners’ ability to cope with the cognitive demands of daily decision-making, the differentiation of expertise encouraged by this distribution of responsibility could
lead to significant impairments in the ability to handle these demands if and when these partners need to independently process information or make decisions.

**STUDY 3: NEEDING MORE FINANCIAL INFORMATION BUT SEARCHING LESS**

Study 2 suggests that offloading responsibility for financial decision-making within relationships may impair consumers’ ability to make optimal financial decisions when “going solo,” and that these potential costs may temper the benefits of distributing responsibility within transactive memory systems. However, consumers may avoid these costs by engaging in information search to fill gaps in financial expertise on an as-needed basis. Such a strategy would allow them to enjoy the best of both worlds, coping with environmental demands by sharing the responsibility within relationships and resuming responsibility when these relationships cannot serve as a source of external expertise.

Unfortunately, research suggests that low financial literacy may decrease search (e.g., Brucks 1985; Punj and Staelin 1983), creating a situation in which those who need information the most will engage with it the least. We expect that this will be the case in financial matters.

In study 3, we examine the effect of distributing responsibility for financial matters within relationships on consumer search in the domain of vehicle purchasing and financing. Purchasing, leasing, and searching for the best deals on personal vehicles are common financial behaviors. However, research suggests that consumers tend to be under-informed about how vehicle purchasing and financing actually work (e.g., Hilgert and Hogarth 2003). In this study, we give participants the opportunity to learn about vehicle financing from expert sources prior to engaging in an incentive-compatible test of knowledge in this domain. We expect that the
distribution of financial responsibility within relationships over time will predict information search, such that individuals who have offloaded more responsibility for more time—that is, those who likely need additional information the most—will be less likely to engage in information search and individuals who have taken on more responsibility for more time will be more likely to engage in search.

Method

Participants. As in studies 1 and 2, our sample was comprised of dating and married US citizens who self-reported that they shared financial resources and/or responsibilities within their current relationships. Our sample for this study consisted of 214 individuals (129 female, 85 male; $M_{age} = 34.46$); 119 were married, 61 were cohabitating, and 21 respondents were engaged. The mean relationship length for this sample was 9.27 years.

Procedure. After reporting relationship-related demographics and completing a financial literacy assessment (as in studies 1 and 2), participants were provided with the opportunity to engage in information search. We created a need for expertise. We told participants that the next section of the survey consisted of answering questions related to knowledge of vehicle purchasing and financing, and that they would receive a bonus payment for every question they answered correctly.

We provided participants with the option to engage in information search prior to answering these questions by giving them the chance to review “expert information” provided by the Federal Trade Commission (FTC), Federal Deposit Insurance Corporation (FDIC), and Consumer Reports prior to answering these questions. This new information consisted of
excerpts from the FTC’s “Understanding Vehicle Financing” brochure, the FDIC’s description of the Annual Percentage Rate (APR), and a Consumer Reports guide to the true cost of vehicle ownership. We emphasized the potential advantage offered by engaging in information search by telling participants that, “this information…will help you earn the highest bonus possible on the following quiz.” The number of pages read by each participant (out of a possible total of seven) served as our measure of information search.

After either accessing all available information or choosing to skip ahead, participants completed a brief multiple-choice quiz based on the provided information and assessing knowledge related to (1) lease agreements, (2) four-square worksheets (Sutton 1982), and (3) depreciation costs associated with vehicle ownership. Quiz scores were converted to a range of 0 to 100, and served as our measure of knowledge in the domain of vehicle purchasing and financing.

Results

Financial Literacy. As noted in Table 1, we replicated the key findings from studies 1 and 2 with respect to the interaction of financial responsibility and relationship length. Again, we replicated the finding of no significant effect of financial responsibility at year zero and the finding that financial literacy increased with financial responsibility for relationship lengths higher than the Johnson-Neyman point of 6.9 years. Similar to studies 1 and 2, financial literacy increased with relationship length for those more than 48.7% responsible. As in study 2, the tendency for those low in responsibility to become less financially literate with increasing relationship length was not significant.
Next, we performed an OLS regression using the same factors to predict information search. The overall regression model was significant ($F(20,193) = 2.10, p = .006; R^2 = .179$). Similar to the pattern of results when predicting decision-making ability in study 2, this analysis revealed that the interaction of responsibility and relationship length predicted information search ($B = .003, t(193) = 2.32, p = .02$). There were no simple main effects for either responsibility at year 0 ($B = -.013, p = .29$) or relationship length for those of equal (0) responsibility ($B = -.007, p = .82$). The lack of a simple effect of relationship length when responsibility was divided equally between partners again suggests a difference between the development of general financial expertise (i.e., financial literacy) and specific financial outcomes (i.e., financial decision-making and information search).

We conducted two floodlight tests to further explore the effects of responsibility and relationship length on information search. Our first test revealed a Johnson-Neyman point indicating that increases in responsibility were associated with increases in information search for all relationships lasting 13.88 years or longer.

Our second floodlight test revealed a previously unseen pattern. Being in a longer relationship significantly increased information search for individuals who were at least 93.88% responsible for financial decision-making, and significantly decreased financial literacy for those were 0.71% responsible or less; taken together, these Johnson-Neyman points suggest that the association between relationship length and information search is only significant for individuals at extreme ends of the responsibility continuum. Prior analyses indicated both that relationship length is positively associated with financial literacy for relationship partners who have roughly equal responsibility (or more) for financial matters and that moderately more financial responsibility (59.28%) is required for producing a positive association between relationship
length and financial decision-making. Considered in this context, it seems that increasing amounts of responsibility may be required for establishing an association between relationship length and improvements in developing, applying, and actively seeking out financial expertise.

Mediation Moderation. As in study 2, we investigated the relationship between the interaction of responsibility and relationship length, financial literacy, and financial outcomes (in this case, information search) using an analysis of mediated moderation. We hypothesized that financial literacy would mediate the effect of the financial responsibility X relationship length interaction on information search, as shown in figure 4.

This analysis suggested that a significant positive effect of the responsibility X relationship length interaction on financial literacy ($B = .002, t(193) = 2.38, p = .018$) in turn positively affected information search ($B = .255, t(192) = 2.81, p = .005$). This significant indirect effect of responsibility X relationship length routed through financial literacy (.0005, 95% CI: .0001 to .0012) reduced the positive total effect of this interaction on information search ($B = .003, t(193) = 2.32, p = .022$) to a marginally significant direct effect ($B = .002, t(192) = 1.85, p = .066$). These results suggest that, as with financial decision-making ability in study 2, differences in information search associated with distributing financial responsibility over time may largely be accounted for by the effects of distributing responsibility on the development of financial literacy.

Task Performance. Finally, we analyzed task performance. An initial OLS regression predicting task performance using the same factors we used to predict financial literacy and
information search was significant \( (F(20,193) = 2.88, p = .0001; R^2 = .230) \), and revealed a significant effect of the responsibility X relationship length interaction \( (B = .028, t(193) = 2.40, p = .018) \) but no simple main effects for either responsibility at a relationship length of 0 years \( (B = -.193, p = .150) \) or relationship length at a responsibility distribution of 50/50 \( (B = -.389, p = .245) \).

Differences in performance on this task could be associated with both general financial literacy and specific knowledge of vehicle financing gained through information search, both of which are associated with the interaction between responsibility and relationship length. We explored the relationships between these potential contributors to task performance using a dual mediation model. We expected that the effect of the responsibility X relationship length interaction on task performance would be mediated by financial literacy, information search, and the effect of financial literacy on information search (figure 5). The individual predictors of responsibility and relationship length were included in the model as covariates.

We tested this model using PROCESS (Hayes 2013). The results of this analysis revealed that the total effect of the responsibility X relationship length interaction on task performance \( (.028, 95\% \text{ CI}: .005 \text{ to } .050) \) was completely mediated by significant indirect effects of this interaction on task performance through financial literacy \( (.009, 95\% \text{ CI}: .003 \text{ to } .018) \), information search \( (.002, 95\% \text{ CI}: .001 \text{ to } .005) \), and financial literacy through information search \( (.007, 95\% \text{ CI}: .001 \text{ to } .018) \). Accounting for these indirect effects revealed no significant direct effect of the responsibility X relationship length interaction on task performance \( (.0097, \)
95% CI: -.0104 to .0298). These results suggest that the distribution of financial responsibility over the course of a relationship is not associated with task performance in and of itself. However, this distribution of responsibility over time is positively associated with both financial literacy, which may improve task performance via both general and specific prior financial knowledge, and the propensity to engage in information search, which may improve task performance by directly providing solutions to problems.

Discussion

Together with the results of studies 1 and 2, these results suggest that the distribution of financial responsibility within transactive relationships over time may create differences in financial literacy, the ability to make optimal financial decisions, and the propensity to engage in financial information search. These effects suggest that relationship partners may experience markedly different financial outcomes when the weight of the “need to know” is shifted from the dyad back to the individual. Consumers who have taken on financial responsibility over the course of the relationship may experience positive outcomes as a result of increases in accumulated financial expertise, the ability to apply this expertise, and the propensity to fill in gaps in expertise via information search. Consumers who have offloaded financial responsibility, on the other hand, may not enjoy these benefits.

The results of studies 1-3 further suggest that these different outcomes may be consequences of developmental trajectories set in motion by initial distributions of expertise. Each study suggests that financial literacy—which is tied to both the ability to make optimal financial decisions and the propensity to engage in financial information search—only becomes
associated with financial responsibility over time. The lack of an association between financial literacy and financial responsibility at the beginning of relationships suggests that financial responsibility, or the “need to know,” is not necessarily distributed according to preexisting levels of expertise. However, this distribution of responsibility may create differences in the extent to which each relationship partner develops financial expertise over time, which may in turn lead to differences in the ability to successfully engage with the financial domain when going solo.

**STUDY 4: DISTRIBUTING RESPONSIBILITY AND CREATING EXPERTISE**

Divisions of responsibility in transactive memory systems have to start somewhere. Partners may sometimes enter into relationships with clearly defined and perfectly complementary areas of expertise. More often, we argue, relative differences in expertise are unclear, *both* partners lack expertise in a given domain, or each partner wants to avoid shouldering the responsibility for the domain in question at all costs.

Distribution of responsibility within the financial domain often involves difficulties such as these, and factors unrelated to expertise or ability often seem to drive the distribution of financial responsibility (Bernasek and Bajtelsmit 2002; Rosen and Granbois 1983). In situations such as these, we suggest that people make the most of whatever limited information they have—and that the distributions of responsibility based on fuzzy cues or circumstantial responsibility may cause differentiations in expertise whether or not the “best” man (or woman) actually gets the job.
We tested this idea—that responsibility creates expertise—using a team-based study of “problem-solving in pairs.” We intentionally created an experimental environment in which the demands of the task exceeded the abilities of any one individual. We asked participants to read and remember 48 facts dispersed across two domains (finance, medicine) within the span of five minutes, then recall as many of these facts as possible after a brief delay. We wanted to see if people would “cope” with the mismatch between task demands and personal abilities by distributing responsibility for each domain between themselves and their partners—despite the fact that we prevented them from communicating.

We took advantage of the fact that relationship partners will often—but not always—use expertise-related cues when distributing responsibility for information (e.g., Hollingshead 2000). We provided these cues to both partners in the form of false feedback on an initial “ability assessment.” By administering randomly assigned false feedback, we ensured that any downstream effects of these cues on performance in the subsequent memory task (e.g., higher recall for items in domains of “high” ability than in domains of “low” ability) would indicate differentiation based on inaccurate intuitions about each partner’s abilities—not differentiation based on accurate intuitions about any pre-existing strengths or weaknesses in financial or medical knowledge.

We also wanted to investigate the specific hypothesis that relationship partners may distribute responsibility according whatever cues are available, even when these cues indicate that neither partner is necessarily a better fit for the job. In many cases, one partner may have a comparative advantage (e.g., Chipman 1965) in a domain despite being neither particularly skilled nor better than the other partner in that domain. Much as in the classic comparative advantage theory of international trade (Ricardo 1817), if person A and person B are equally
good (or bad) in domain 1, but person A is better in domain 2, person B may be said to have a comparative advantage in domain 1 and person B to have a comparative advantage in domain 2. For example, if one partner has low ability in the domains of both finance and medicine and the other partner has low ability in finance but high ability in medicine, the first partner has a comparative advantage in finance despite having low absolute ability. Because the second partner holds an absolute advantage in the domain of medicine, the first partner’s relative disadvantage (or comparative advantage) is more favorable in the domain of finance than in medicine. We investigated the willingness of relationship partners to distribute responsibility according to comparative advantage by providing some partners with false feedback suggesting that one partner had equally high or low levels of ability in both relevant domains (finance and medicine), whereas the other had a high level of ability in one domain but a low level of ability in the other.

Method

Participants. One hundred undergraduate students from a large North American university were recruited for a study on “Problem-Solving in Pairs.” Ten students did not attend, two participants (one pair) were excluded from analysis for failing to follow task instructions, and two participants (one pair) were excluded from analysis for indicating that they had prior knowledge of each other’s expertise; 86 participants remained for our final analyses (27 female, 59 male; $M_{\text{age}} = 20.14$). Participants were compensated with course credit, and we ensured incentive compatibility by offering a performance-based bonus to the pair with the highest performance (a $50 Amazon gift card for each partner).
Experimental Design. We used a 3 X 2 X 2 mixed factorial design in which we varied “Feedback Condition” (no advantage & identical skills v. comparative advantage v. absolute advantage) and “Domain of Advantage” (finance v. medicine) between subjects, and “Item Type” (responsible domain, not responsible domain) within subjects. We also included conditions counterbalancing each of our between-subjects factors; full details of these conditions and related analyses are included in Appendix 2.

We used false feedback to create three conditions of interest, each created by the pattern of feedback delivered to the pair as a whole. In other words, the manipulation for each individual was created by the combination of the feedback administered to that individual and the feedback administered to that individual’s partner. Participants in the “no advantage” condition received feedback indicating that their partners had the same levels of ability in the same domains. Participants in the “absolute advantage” condition received feedback indicating that their partners had perfectly complementary levels of ability—their strengths were their partners’ weaknesses, and their weaknesses were their partners’ strengths. Participants in the “comparative advantage” condition received feedback indicating that they were similar to their partners in one area, and different in the other.

The “Domain of Advantage” between-subjects condition and “Item Type” within-subjects factor were also created using false feedback. Within each pair, each individual could have absolute or comparative advantage in either finance or medicine. The domain in which each individual received feedback indicating relatively high ability was the “Domain of Advantage.” Items corresponding to this domain in the memory task were considered to be in the “responsible domain” of “Item Type,” and items not corresponding to this domain were considered to be in the “not responsible domain.”
Our key dependent variable was the difference in recall for items in the “responsible” and “not responsible” domains for each participant, controlling for total recall.

Procedure. Participants arrived at the testing area independently and were grouped into ad hoc partnerships upon arrival. We ensured that no partners had prior relationships of any kind with each other. Each pair was seated together in a separate testing room, and each partner within each pair was seated on opposite sides of a table in the room.

All participants were told that they would be receiving a packet of new information related to two domains, finance and medicine, and that their task was to remember as much of this information as possible together with their partner. Participants were told that their performance would be scored according to a “union recall incentive” (e.g., Hollingshead 2001), in which their team would receive one point for any item recalled by either partner, but would not receive additional points for items recalled by both partners; this scoring method mirrors the “disjunctive” task structures (Kerr and Bruun 1983) often underlying real-world transactive memory systems.

Participants were then told that, although they would be evaluated as a team, they would not be allowed to communicate with each other in any way during the study. Although limiting communication tends to impair the distribution of responsibility between new partners (e.g., Hollingshead 1998), we wanted to be sure that participants’ estimations of their partners’ expertise was based on our randomly assigned false feedback, as opposed to any information they might share about their actual levels of expertise (e.g., college major, prior experience in a given domain).

After receiving the task instructions, participants were given five minutes to complete a 12-item multiple choice “ability assessment” consisting of six items in two domains: finance and
medical knowledge. Participants were told that this assessment would serve as a measure of baseline ability in each domain for the upcoming memory task, and would be used to adjust our calculations of individual differences in memory ability.

We used false feedback about performance on these ability assessments to create our three manipulated “Feedback Condition” factors: “no advantage,” “absolute advantage,” and “comparative advantage.” Feedback was framed as “performance relative to average,” and each partner was told only that he or she scored “high” or “low” relative to the average of a separate web-based sample used to validate the ability assessment. Each partner received this feedback on a two-column sheet of paper with his or her performance in each domain indicated in the left column, and his or her partner’s performance in each domain indicated in the right column. In order to ensure that each partner was aware of his or her randomly assigned domains of high and low expertise, his or her partner’s (randomly assigned) domains of high and low ability, and the similarities and/or differences in ability between partners, we instructed participants to circle any domains in which they scored higher than average on the ability assessment, then circle any domains in which their partners scored higher than average.

Participants were then given five minutes to read and remember as much information as they could from an information packet consisting of information related to our two key domains of finance and medical knowledge. Each packet contained eight six-item lists, four related to finance (stocks, vehicle financing, life insurance, credit cards) and four related to medical knowledge (heart health, the endocrine system, cancer, mental illness). We reiterated to participants that their team score would be based on the total number of items recalled by either partner during a later testing phase, then emphasized that they were not allowed to talk or communicate with their partners in any way.
We administered the memory recall task—the source of our key dependent variable—approximately three minutes after collecting the information packets. Participants were given five minutes to complete as many fill-in-the-blank statements as they could, with a possible total of 48 (one for each fact listed in the information packet). We were interested not in *how much* each participant remembered, but in *what* each participant remembered. We wanted to know if participants would intuitively take on responsibility for remembering information in domains for which our false feedback manipulation indicated that they had a comparative or absolute advantage, and offload responsibility for remembering information in domains for which they did not.

Results

*Advantage and Responsibility.* Because the two members of each pair had no means of communication, we treated them as independent for purposes of analysis, analyzing the data as a between participants design. We analyzed participants’ degree of distributed responsibility according to a 3 X 2 X 2 mixed factorial design with the between-subjects factors of “Feedback Condition” (no advantage v. comparative advantage v. absolute advantage) and “Domain of Advantage” (finance v. medicine), and the within-subjects factor of “Item Type” (responsible domain, not responsible domain). We included total number of items recalled as a covariate. Note that this covariate will have no effect on key comparisons involving the critical interaction of Feedback Condition with Item Type. We expected that participants would remember significantly more items in the “responsible domain” than in the “not responsible domain” when
provided with cues indicating comparative or absolute advantage, but not when provided with cues indicating no advantage.

We expected and found a significant interaction between Feedback Condition and Item Type, \( F(2,77) = 8.26, p = .001, \eta^2 = .18 \), indicating that the difference between recall for items in responsible v. not responsible domains within each participant differed according to the type of false feedback provided to that participant’s team. Neither the two-way interaction (Domain of Advantage X Item Type) nor the three-way interaction (Domain of Advantage X Feedback Condition X Item Type) was significant, indicating that the particular domain of information was not important for purposes determining the direction or intensity of participants’ attention. Rather, differential memory for one domain over another was driven by the type and degree of differences in ability between partners indicated by our false feedback manipulation.

We conducted a series of pairwise comparisons to assess the effect of Item Type within each Feedback Condition. These analyses revealed simple effects of Item Type within the absolute advantage and comparative advantage conditions: \( F_{\text{AbsoluteAdvantage}}(1,77) = 14.85, p < .001, \eta^2 = .16 \); \( F_{\text{ComparativeAdvantage}}(1,77) = 4.33, p = .04, \eta^2 = .05 \). There was no effect of Item Type within the no advantage condition, \( F(1,77) = 2.67, p = .11 \). Taken together, these comparisons indicate that cues indicating both comparative advantage and absolute advantage lead individuals to selectively remember items related to their implied domains of responsibility. Cues indicating no advantage, however, are not associated with differential recall for information in different domains.
Last, we conducted a series of interaction contrasts comparing all possible pairs of conditions (no advantage v. comparative advantage, comparative advantage v. absolute advantage, no advantage v. absolute advantage) on the difference between recall for “responsible” and “not responsible” items. These contrasts revealed a significant difference between the no advantage and comparative advantage conditions ($F(1,59) = 6.85, p = .01, \eta^2 = .11$) and no advantage and absolute advantage conditions ($F(1,43) = 15.68, p < .001, \eta^2 = .27$); the difference between the comparative advantage and absolute advantage conditions was marginally significant ($F(1,49) = 2.78, p = .10$). See figure 1 for all means.

Discussion

This study suggests both that people intuitively distribute responsibility for domains of information and that this distributed responsibility is associated with selective attention to domains for which the individual is responsible at the expense of attention to domains for which this individual is not responsible. The task environment incentivized maximizing the performance of the team as a whole and our false feedback manipulation implied domains of responsibility by providing cues related to each partner’s relative ability within each domain. However, these domains were not explicitly assigned and participants were never instructed to selectively attend to one domain over another. The demonstrated effect—that participants remembered more information in domains of comparative or absolute advantage than in others—suggests that these participants both intuitively interpreted feedback cues in terms of domains of responsibility and selectively attended to information in domains for which they were responsible. This tacit understanding of how to allocate attention based on comparative
advantage is a completely novel result not present in the transactive memory literature. In long-term relationships, this displayed tendency to selectively attend to information in some domains at the expense of others may lead to the development of differentiated domains of expertise over time. In other words, initial distributions of responsibility could cause transactive memory partners to develop differentiated areas of expertise over time.

**GENERAL DISCUSSION**

Using data from both a laboratory experiment and cross-sectional analyses of individuals in dating and married relationships, we provide evidence that transactive memory systems shape the development of financial expertise on a “need to know” basis. When consumers cope with task demands not as individuals, but as dyads, they distribute responsibility for information and decision-making in different domains. Although this system of sharing the “need to know” may enable relationship partners to know more together than either could alone, the differentiation of expertise within transactive memory systems may impair the ability of each partner to process information and make decisions when “going solo.”

Studies 1, 2, and 3 use cross-sectional data to paint a picture of the development of financial expertise within relationships over time. These studies suggest that financial responsibility and financial literacy are not associated for individuals in the early stages of a relationship, but that initial distributions of financial responsibility may lead to differences in financial literacy over time. Study 2 suggests that differences in financial literacy associated with the interaction of financial responsibility and relationship length may in turn create differences in the ability to make optimal financial decisions. Study 3 suggests that these
differences may also be associated with differences in the willingness to engage in financial information search. Together, these studies suggest that the distribution of responsibility for financial decision-making within transactive relationships may lead to markedly different outcomes over time for those who take on financial responsibility compared to those who offload responsibility in the financial domain.

Study 4 provides experimental evidence in support of the patterns revealed in studies 1, 2, and 3. Strangers placed into ad hoc partnerships seemed to intuitively distribute responsibility for information in different domains, and this distribution of responsibility led each partner to focus on some domains at the expense of others. Within minutes of meeting each other and without communicating, individuals in new partnerships developed strategies of interacting with the informational environment in ways that would benefit not just the individual, but the dyad. When this tendency is expressed in long-term relationships, it may be that even subtle cues or circumstantial responsibility could begin a cycle of selective attention and experience creating differentiated expertise from initial distributions of responsibility.

Implications

We explored transactive memory solely in the context of romantic relationships, but people may also form transactive memory systems with friends, coworkers, or even the Internet (Ward 2013). Different partners may be used as forms of external memory and expertise in different domains, and reliance on these partners may have similar effects in terms of the development of expertise. When consumers can easily access someone who knows, they no longer “need to know.” For example, the relationship between consumers and financial advisors
may also be conceptualized in terms of a limited transactive memory system, where individuals offload responsibility to the “experts” in their lives. This concept may even extend to decision aids; people who use Mint may no longer need to categorize and budget their spending because this responsibility is taken care of by a digital relationship partner.

Although distributing responsibility for various domains of information may often improve individuals’ well-being, offloading expertise can be costly when the source of this expertise is no longer available—whether temporarily or permanently. Research suggests that people may try to prepare for the anticipated loss of a transactive memory partner by developing expertise in long-offloaded domains. For example, elderly women seem to increase their financial literacy later in life in anticipation of the passing of their husbands, who often have more responsibility for financial decision-making (Hsu 2011); they seem to realize that they will soon be “going solo,” and prepare for the day on which they will have to handle the demands of daily responsibilities not as part of a dyad, but as individuals.

Future research could examine the effect of anticipated and unanticipated loss on the ability to process information and make decisions. It may be that unanticipated loss leads to impairments for individuals who have habitually offloaded responsibility in a given domain, but anticipated loss does not. Interestingly, the anticipation of loss could be a product either of the loss itself—for example, losing a loved one to illness v. an accident—or the foresight of the individual—for example, a college student planning for financial independence v. one failing to look ahead.
Conclusion

The tendency to cope with the mismatch between environmental demands and individual cognitive abilities by offloading responsibility for handling many of these demands to relationship partners may affect both the willingness and the ability to develop individual expertise. When relationship partners take on or offload the “need to know” in the financial domain, differences in the distribution of financial responsibility may create corresponding differences in financial literacy over time. These differences in financial literacy may subsequently create different financial outcomes for each partner if and when they are forced to “go solo” by affecting both the ability to make optimal financial decisions and the propensity to engage in information search.
# APPENDIX 1A: COMPARISON OF OLS REGRESSION MODELS, STUDY 1

## OLS Regression, Study 1

<table>
<thead>
<tr>
<th>Model</th>
<th>1</th>
<th>2</th>
<th>Full</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interaction: Responsibility X Relationship Length</td>
<td>.358**</td>
<td>.250**</td>
<td>.278**</td>
</tr>
<tr>
<td>Relationship Length</td>
<td>.209**</td>
<td>.169*</td>
<td>.164*</td>
</tr>
<tr>
<td>Responsibility</td>
<td>.012</td>
<td>.024</td>
<td>-.037</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td>.142†</td>
<td>.028</td>
</tr>
<tr>
<td>Female</td>
<td>-.301**</td>
<td>-.289**</td>
<td></td>
</tr>
<tr>
<td>Salary</td>
<td></td>
<td>.021</td>
<td></td>
</tr>
<tr>
<td>Partner Works</td>
<td></td>
<td>-.042</td>
<td></td>
</tr>
<tr>
<td>Partner Contributes to Financial Resources</td>
<td></td>
<td>.144†</td>
<td></td>
</tr>
<tr>
<td><strong>Ethnicity:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African-American</td>
<td></td>
<td>-.133**</td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td></td>
<td>-.099*</td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td></td>
<td>-.028</td>
<td></td>
</tr>
<tr>
<td>Pacific Islander</td>
<td></td>
<td>-.058</td>
<td></td>
</tr>
<tr>
<td>Native American</td>
<td></td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>.046</td>
<td></td>
</tr>
<tr>
<td><strong>Education:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td></td>
<td>.239</td>
<td></td>
</tr>
<tr>
<td>Some College</td>
<td></td>
<td>.386†</td>
<td></td>
</tr>
<tr>
<td>Two-Year College Degree</td>
<td></td>
<td>.277†</td>
<td></td>
</tr>
<tr>
<td>Four-Year College Degree</td>
<td></td>
<td>.715**</td>
<td></td>
</tr>
<tr>
<td>Masters Degree</td>
<td></td>
<td>.461**</td>
<td></td>
</tr>
<tr>
<td>Doctoral Degree</td>
<td></td>
<td>.153*</td>
<td></td>
</tr>
<tr>
<td>Professional Degree</td>
<td></td>
<td>.267**</td>
<td></td>
</tr>
<tr>
<td>$R^2$</td>
<td>.193</td>
<td>.271</td>
<td>.446</td>
</tr>
<tr>
<td>$R^2$ Change</td>
<td>--</td>
<td>.078**</td>
<td>.175**</td>
</tr>
</tbody>
</table>

Values shown are standardized beta coefficients

Gender ("Female") is dummy coded with "Male" as the reference group
Ethnicity variables are dummy coded with "Caucasian" as the reference group
Education variables are dummy coded with "less than high school" as the reference group

† = $p < .10$    * = $p < .05$    ** = $p < .01$
APPENDIX 1B: COMPARISON OF ALTERNATE OLS REGRESSION MODELS, STUDY 1

<table>
<thead>
<tr>
<th>Model</th>
<th>Alternate 1</th>
<th>Alternate 2</th>
<th>Alternate 3</th>
<th>Final</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interaction: Responsibility X Relationship Length</td>
<td>--</td>
<td>--</td>
<td>.344**</td>
<td>.278**</td>
</tr>
<tr>
<td>Interaction: Responsibility X Age</td>
<td>.231</td>
<td>.243</td>
<td>-.271</td>
<td>--</td>
</tr>
<tr>
<td>Relationship Length</td>
<td>--</td>
<td>.201**</td>
<td>.154*</td>
<td>.164*</td>
</tr>
<tr>
<td>Responsibility</td>
<td>-.059</td>
<td>-.076</td>
<td>.176</td>
<td>-.037</td>
</tr>
<tr>
<td>Age</td>
<td>.17**</td>
<td>.027</td>
<td>.052</td>
<td>.028</td>
</tr>
<tr>
<td>Female</td>
<td>-.301**</td>
<td>-.306**</td>
<td>-.295**</td>
<td>-.289**</td>
</tr>
<tr>
<td>Salary</td>
<td>.031</td>
<td>.033</td>
<td>.013</td>
<td>.021</td>
</tr>
<tr>
<td>Partner Works</td>
<td>-.026</td>
<td>-.024</td>
<td>-.045</td>
<td>-.042</td>
</tr>
<tr>
<td>Partner Contributes to Financial Resources</td>
<td>.123</td>
<td>.122</td>
<td>.147*</td>
<td>.144†</td>
</tr>
</tbody>
</table>

Ethnicity:  
- African-American: -.121*  
- Hispanic: -.081  
- Asian: -.029  
- Pacific Islander: -.068  
- Native American: --  
- Other: .049

Education:  
- High School: .202  
- Some College: .348  
- Two-Year College Degree: .240  
- Four-Year College Degree: .660**  
- Masters Degree: .441**  
- Doctoral Degree: .150*  
- Professional Degree: .253**  

$R^2$  
.397

Values shown are standardized beta coefficients  
Gender ("Female") is dummy coded with "Male" as the reference group  
Ethnicity variables are dummy coded with "Caucasian" as the reference group  
Education variables are dummy coded with "less than high school" as the reference group  

† = $p < .10$    * = $p < .05$    ** = $p < .01$
APPENDIX 2: COUNTERBALANCED CONDITIONS AND ANALYSES IN STUDY 4

The analyses reported in study 4 were conducted on a set of pooled counterbalanced sub-conditions. We created two sub-conditions within the “comparative advantage” condition: an “under-skilled” condition in which one partner received feedback indicating low ability in both domains and the other partner received feedback indicating high ability in one domain and low ability in the other, and an “over-skilled” condition in which one partner received feedback indicating high ability in both domains and the other partner received feedback indicating high ability in one domain and low ability in the other. We expected that these would not differ.

We counterbalanced the administration of all ability feedback between partners within each condition, and expected to find no effect of counterbalancing, no difference between under-skilled and over-skilled sub-conditions within the mixed expertise condition, and no difference between partners within each pair for the mixed expertise conditions (even though one partner received feedback indicating an absolute advantage between domains and the other received feedback indicating no difference in ability between domains).

See Appendix table 1 for a description of all counterbalanced conditions and a summary of comparison contrasts used to confirm that these conditions could be pooled for further analysis. Of these comparison contrasts, the first seven test a set of auxiliary assumptions that certain counterbalanced variants of our three basic conditions were equivalent and could be pooled for our main comparisons among the “no advantage”, “comparative advantage”, and “absolute advantage” conditions. Contrasts 8 and 9 test our main hypotheses.
Analyses

Contrasts within Identical and Differentiated Conditions. Because the two members of each pair had no means of communication, we treated them as independent for purposes of analysis, analyzing the data as a completely between participants design. We first conducted 9 planned contrasts (see appendix table 1), with the difference of recall for “responsible” minus “not responsible” items as our dependent measure. The first four planned contrasts (contrasts 1-4) assessed whether the counterbalanced versions of each of our four feedback manipulations (no advantage, absolute advantage, and separate contrasts for the under- and over-skilled sub-conditions of the comparative advantage condition) could be combined for future analyses. These contrasts revealed no significant effects, suggesting that each of these counterbalanced versions could be combined for all further analyses:

Contrast 1: $F(1,70) = 0.67, p = .42$

Contrast 2: $F(1,70) = 0.02, p = .90$

Contrast 3: $F(1,70) = 0.31, p = .58$

Contrast 4: $F(1,70) = 0.10, p = .75$

Contrasts within Mixed Expertise Condition. Next, we conducted three planned contrasts related to potential differences within the mixed expertise condition (contrasts 5-7). The first two contrasts probed for differences between partners in the under-skilled and over-skilled conditions. Contrasts 5 and 6 compared members in mixed pairs where one member received high ability feedback in one domain and low ability feedback in the other and the second received uniformly low (contrast 5) or uniformly high ability feedback (contrast 6). As we expected, both the first and second members of such pairs had equivalent tendency to have better
recall in their area of comparative advantage compared to their area of comparative
disadvantage:

Contrast 5: $F(1,70) = 2.38, p = .13$

Contrast 6: $F(1,70) = 0.59, p = .45$

Contrast 7: $F(1,70) = 0.07, p = .79$

Based on the expected null findings in contrasts 1-7, we pooled all variants of “no advantage”,
pooled all variants of “absolute advantage”, and pooled all variants of “comparative advantage”
pairs for purposes of analysis.
### APPENDIX TABLE 1. PLANNED CONTRASTS ON COUNTERBALANCED CONDITIONS IN STUDY 4.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Team-Level Feedback</th>
<th>Team Member</th>
<th>Feedback: Financial Knowledge</th>
<th>Feedback: Medical Knowledge</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Advantage</td>
<td>Identical, v1</td>
<td>1</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Identical, v2</td>
<td>1</td>
<td>Low</td>
<td>High</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>Low</td>
<td>High</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Absolute Advantage</td>
<td>Complementary, v1</td>
<td>1</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>Low</td>
<td>High</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Complementary, v2</td>
<td>1</td>
<td>Low</td>
<td>High</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>High</td>
<td>Low</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Comparative Advantage</td>
<td>Under-skilled, v1</td>
<td>1</td>
<td>Low</td>
<td>Low</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>High</td>
<td>Low</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Under-skilled, v2</td>
<td>1</td>
<td>Low</td>
<td>Low</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>Low</td>
<td>High</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Over-skilled, v1</td>
<td>1</td>
<td>High</td>
<td>High</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>High</td>
<td>Low</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Over-skilled, v2</td>
<td>1</td>
<td>High</td>
<td>High</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>Low</td>
<td>High</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Contrast 1: “No advantage” version 1 v. “No advantage” version 2
Contrast 2: “Absolute advantage” version 1 v. “Absolute advantage” version 2
Contrast 4: “Over-skilled” version 1 v. “Over-skilled” version 2
Contrast 5: “Comparative advantage” v. “Real advantage” in Under-skilled conditions
Contrast 6: “Comparative advantage” v. “Real advantage” in Over-skilled conditions
Contrast 7: “Under-skilled” v. “Over-skilled” versions of Comparative Advantage condition
Contrast 8: Test of linear trend (No Advantage → Comparative Advantage → Absolute Advantage)
Contrast 9: Test of quadratic trend (No Advantage + Absolute Advantage v. Comparative Advantage)
REFERENCES


Ricardo, David (1817), *On the Principles of Political Economy and Taxation*.


<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interaction: Responsibility X Relationship Length</td>
<td>.003**</td>
<td>.001</td>
<td>.278</td>
</tr>
<tr>
<td>Relationship Length</td>
<td>.051*</td>
<td>.021</td>
<td>.164</td>
</tr>
<tr>
<td>Responsibility</td>
<td>-.005</td>
<td>.009</td>
<td>-.037</td>
</tr>
<tr>
<td>Age</td>
<td>.007</td>
<td>.019</td>
<td>.028</td>
</tr>
<tr>
<td>Female</td>
<td>-1.671**</td>
<td>.315</td>
<td>-.289</td>
</tr>
<tr>
<td>Salary</td>
<td>.002</td>
<td>.005</td>
<td>.021</td>
</tr>
<tr>
<td>Partner Works</td>
<td>-.117</td>
<td>.203</td>
<td>-.042</td>
</tr>
<tr>
<td>Partner Contributes to Financial Resources</td>
<td>.331</td>
<td>.171</td>
<td>.144</td>
</tr>
</tbody>
</table>

**Ethnicity:**

- African-American: -1.629**
- Hispanic: -1.384*
- Asian: -.358
- Pacific Islander: -1.944
- Native American: --
- Other: 1.553

**Education:**

- High School: 2.257†
- Some College: 2.482†
- Two-Year College Degree: 2.499†
- Four-Year College Degree: 4.285**
- Masters Degree: 4.162**
- Doctoral Degree: 4.193*
- Professional Degree: 6.378**

Gender (“Female”) is dummy coded with “Male” as the reference group.
Ethnicity variables are dummy coded with “Caucasian” as the reference group.
Education variables are dummy coded with “less than high school” as the reference group.

† = p < .10
* = p < .05
** = p < .01
<table>
<thead>
<tr>
<th>Variable</th>
<th>Study 1</th>
<th></th>
<th></th>
<th>Study 2</th>
<th></th>
<th></th>
<th>Study 3</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$</td>
<td>$SE$ $B$</td>
<td>$\beta$</td>
<td>$B$</td>
<td>$SE$ $B$</td>
<td>$\beta$</td>
<td>$B$</td>
<td>$SE$ $B$</td>
<td>$\beta$</td>
</tr>
<tr>
<td>Interaction: Responsibility X Relationship Length</td>
<td>.003**</td>
<td>.001</td>
<td>.278</td>
<td>.002*</td>
<td>.001</td>
<td>.187</td>
<td>.002*</td>
<td>.001</td>
<td>.207</td>
</tr>
<tr>
<td>Relationship Length (at equal responsibility)</td>
<td>.051*</td>
<td>.021</td>
<td>.164</td>
<td>.046†</td>
<td>.024</td>
<td>.158</td>
<td>.052*</td>
<td>.025</td>
<td>.176</td>
</tr>
<tr>
<td>Responsibility (at zero years relationship length)</td>
<td>-.005</td>
<td>.009</td>
<td>-.037</td>
<td>.007</td>
<td>.010</td>
<td>.054</td>
<td>&lt;.001</td>
<td>.010</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.446</td>
<td></td>
<td></td>
<td>.525</td>
<td></td>
<td></td>
<td>.416</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Johnson-Neyman point 1</td>
<td>5.51 years</td>
<td></td>
<td></td>
<td>4.62 years</td>
<td></td>
<td></td>
<td>6.91 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Johnson-Neyman point 2</td>
<td>47.3% responsible</td>
<td></td>
<td></td>
<td>50.56% responsible</td>
<td></td>
<td></td>
<td>48.71% responsible</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Johnson-Neyman point 1 = relationship length at which increases in financial responsibility are associated with increases in financial literacy

Johnson-Neyman point 2 = level of responsibility at which increases in relationship length are associated with increases in financial literacy

† = $p < .10$

* = $p < .05$

** = $p < .01$
FIGURE 1. DIFFERENCES IN FINANCIAL RESPONSIBILITY PREDICT THE DEVELOPMENT OF FINANCIAL LITERACY IN RELATIONSHIPS OVER TIME (STUDY 1)

Differences in Financial Responsibility Predict the Development of Financial Literacy in Relationships Over Time

Financial Literacy Score (Max 13)

Relationship Length (Years)

5.51 Years (JN)

100% Responsible
50% Responsible
47.3% Responsible (JN)
8.4% Responsible (JN)
0% Responsible
FIGURE 2. SAMPLE SET OF INVESTMENT ALTERNATIVES (STUDY 2)

You have $10,000 to invest for the next five years. Choose how to allocate this $10,000 between the following investment options:

**5 Year Investment A**
- Fixed gross return of 5% per year
- No initial set-up fee
- Annual management fee of 0.5% (payable on the entire amount held at the end of each year)

**5 Year Investment B**
- Fixed gross return of 30%, applied at the end of the 5th year
- Initial set-up fee of 8.75%, collected at the beginning of the first year
- No annual management fee

How much money would you like to invest in each option? Please enter a number between 0 and 10,000 in each of the boxes below, so that your total investments add up to $10,000.

<table>
<thead>
<tr>
<th>Amount to invest in Investment A</th>
<th>$0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount to invest in Investment B</td>
<td>$0</td>
</tr>
<tr>
<td>Total</td>
<td>$0</td>
</tr>
</tbody>
</table>
FIGURE 3. FINANCIAL LITERACY MEDIATES THE RELATIONSHIP BETWEEN THE FINANCIAL RESPONSIBILITY X RELATIONSHIP LENGTH INTERACTION AND OPTIMAL FINANCIAL DECISION-MAKING (STUDY 2)
FIGURE 4. FINANCIAL LITERACY MEDIATES THE RELATIONSHIP BETWEEN THE FINANCIAL RESPONSIBILITY X RELATIONSHIP LENGTH INTERACTION AND INFORMATION SEARCH (STUDY 3)
FIGURE 5. THE RELATIONSHIP BETWEEN THE RESPONSIBILITY X RELATIONSHIP LENGTH INTERACTION AND TASK PERFORMANCE IS COMPLETELY MEDIATED BY FINANCIAL LITERACY, INFORMATION SEARCH, AND THE EFFECT OF FINANCIAL LITERACY ON INFORMATION SEARCH (STUDY 3)

Financial Literacy ➔ Information Search

Financial Responsibility X Relationship Length ➔ Task Performance

A₁ = .002*
A₂ = .003*
B₁ = 4.27**
B₂ = 3.65**
C₁ = .028
C₁' = .010
D₁ = .255**

Note: Financial Responsibility and Relationship Length are included as covariates.

This relationship could also be presented as a moderated dual mediation, with Relationship Length moderating the effect of Financial Responsibility on Financial Literacy, Information Search, and Task Performance.

*Path significant at \( p < .05 \)
**Path significant at \( p < .01 \)
FIGURE 6. AD HOC PARTNERS DISTRIBUTE RESPONSIBILITY AND SELECTIVELY REMEMBER INFORMATION IN RESPONSIBLE DOMAINS (STUDY 4)

Distributing Responsibility Creates Differences in Memory for Information in Different Domains

Condition

- No Advantage: $p = .11$
- Comparative Advantage: $p = .04$
- Absolute Advantage: $p < .001$

$P_{interaction} = .01$  $P_{interaction} = .10$  $P_{interaction} < .001$