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A Systematic Review of Empirical Studies on Advice-Based Decisions in Behavioral and Organizational Research

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We conducted a systematic review of 143 empirical studies of advice-based decision making published in management or psychology between 2006 and 2020. We identified two distinct streams of the literature. The first, behavioral research, features experimental research on advice-based decisions conducted in laboratories. The second, organizational research, features observational field research on advice-based decisions in organizations. We organized the findings from the two research streams around three sequential stages: advice solicitation and provision, advice utilization, and the outcomes of advice-based decisions. Our review reveals the two streams to be highly complementary—with behavioral research focusing primarily on advice utilization and organizational research focusing primarily on advice believes the solicitation. We consolidate key findings across the two streams. We also identify key challenges for future research, such as greater emphasis on the social aspects of advice-based decisions and the continued development and refinement of normative benchmarks.

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Advice plays an important role in how people make decisions in virtually all walks of life. Researchers, for instance, revise their work in response to their peers' suggestions. Diners consult their friends before visiting a new restaurant. Managers and CEOs seek expert advice before making important business decisions.

In this article, we conceptualize advice as any opinion or information that one person, "the advisor," shares with another, the "decision maker," in the context of a specific decision problem, "the environment" (see MacGeorge & Van Swol, 2018a, p. 6). As research on decision making has flourished in recent years, so has research on advice. To gain a more comprehensive understanding of this work, we conducted a systematic review of empirical studies of advicebased decisions published in management or psychology journals between 2006 and 2020. Each field provides insights that are relevant to both investigators and managers. But researchers in the two fields do not always communicate with each other, and the recent surge in research has resulted in a proliferation of findings that are individually interesting but also remain somewhat disconnected. In this article, we synthesize the existing research with the aim of evaluating the two fields' findings from an overarching perspective. This perspective goes beyond prior work on related topics, which has focused on either management research or psychology alone (e.g., Lim et al., 2020; Ma et al., 2020; MacGeorge & Van Swol, 2018b; Rader et al., 2017). The last review

with the explicit goal of speaking to advice researchers in both management and psychology was conducted 16 years ago by Bonaccio and Dalal (2006).

Our review of the literature revealed two distinct yet complementary streams of research. The first, behavioral research, straddles psychology and management and mainly reports experimental laboratory studies. The second, organizational research, is situated within the management literature and mainly reports observational field studies. We present and discuss our findings in terms of this distinction between behavioral and organizational advice research, and our analysis sheds new light on both fields.

As a point of departure for our review, we introduce an intuitive three-stage model of advicebased decisions (Figure 1). The first stage, advice solicitation and provision, deals with why decision makers solicit others' opinions, and why advisors provide them. The second stage, advice utilization, asks to what extent decision makers then follow and utilize the advice. The third stage, outcomes of advice-based decision making, examines how the solicitation and utilization of advice affect various outcome variables, from subjective confidence to firm performance. We structure our review according to the three stages and the key research questions associated with each of them. All studies we reviewed fit one (or sometimes more) of the three stages.

Next, we describe our sample selection process, provide a summary of the literature, and

Figure 1

Advice-Based Decisions in	Three Stages and	the Key Research	Questions Associate	d With Each of These Stages
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	Stage 1 Advice solicitation and provision	Advice	Stage 2 Advice utilization	Decision	Stage 3 Outcomes of advice- based decisions
Decision problem	 WHEN and WHY do decision makers solicit advice? WHOSE advice and WHAT KIND of advice do decision makers seek? 	Auvice	 WHEN, HOW and WHY do decision makers use advice? WHOSE advice do decision makers use? What FACTORS influence advice utilization? 		 How does advice affect PERFORMANCE? How does it affect CONFIDENCE? What are its RELATIONAL outcomes?

introduce and explain the distinction between behavioral and organizational research. In the three core sections that follow, we leverage our three-stage model to organize the findings from the two streams of research and explore the similarities and differences between them. Finally, we conclude by identifying shared insights, which can be consolidated across the two research streams, and offer opportunities for cross-fertilization for future advice research.

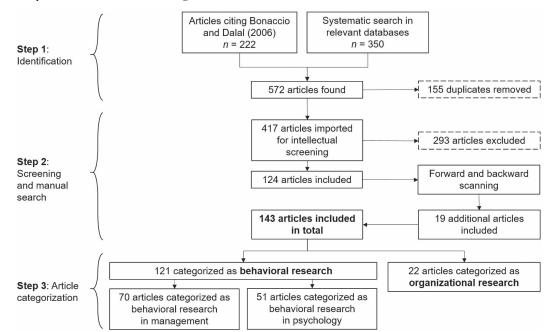
Sample Selection

Our sample consists of empirical studies of advice-based decisions published between 2006 and 2020. We thus begin where Bonaccio and Dalal's (2006) review of early advice research left off. In selecting our sample, we adopted a systematic review procedure consistent with other research (e.g., Jones & Gatrell, 2014; Rojon et al., 2021; Tranfield et al., 2003) and prioritized comprehensiveness, structure, and transparency, in line with best practices identified by Hiebl (2021). Figure 2 provides a summary; additional details are available from our open science framework (OSF) repository (Kämmer et al., 2022). Taking Bonaccio and Dalal's (2006) review as a starting point, we forward-tracked all its references. Systematic searches with the keyword "advice," along with at least one of the keywords "decision making," "psychology," or "management" in the relevant databases— EBSCO, American Psychological Association PsycINFO, PSYNDEXplus, ProQuest, and Web of Science—provided a second starting point. Our search syntax reflected our focus on peer-reviewed empirical decision research in management and psychology (see OSF repository; Kämmer et al., 2022).

We then conducted a title and abstract analysis and, where necessary, a full-text assessment, on this initial sample. This allowed us to prune the sample of applied research on educational, financial, legal, or medical advice, and to maintain our focus on decision research in management and psychology (for a full list of exclusion criteria, see OSF repository; Kämmer et al., 2022). Finally, we hand searched the citations of the remaining articles and identified additional relevant articles via backward and forward scanning (Tranfield et al., 2003; Webster & Watson, 2002).

Figure 2

Sample Selection and Article Categorization



Sample Summary

Once we determined the final sample, we collected meta-data on each of the 143 articles included in the review. Qualified research assistants coded whether an article reported field or laboratory data, whether the article spoke to advice solicitation, advice utilization, or the outcomes of advice, and whether it focused on the decision maker or on the advisor. If an article fit multiple of these categories-for example, an article that contained both field and laboratory data, or one that focused on both the decision maker and the advisor-it was coded accordingly. In addition, the research assistants coded the departmental affiliation for each article's first three authors, the number of authors, the journal the article was published in and its International Scientific Indexing (ISI), and the year of publication. Each article was coded independently by two research assistants, and we (the authors) later reviewed the data and resolved any inconsistencies. Table A1 in the Appendix provides an overview of our article sample in terms of the key variables, and additional technical details as well as the data file can be found in our OSF repository (Kämmer et al., 2022).

For an initial overview of the advice research reviewed in this article, we include a brief summary of the article meta-data's key characteristics here (see also Table A1). First, the articles we reviewed were distributed asymmetrically across our model's three stages. Only 29.4% of the articles covered advice solicitation (Stage 1), whereas 68.5% covered advice utilization (Stage 2) and 60.8% covered outcomes of advice-based decisions (Stage 3). Second, our review process found that many (93.0%) articles adopted the perspective of the decision maker or advisee, but only a few (14.7%) adopted the advisor's perspective. Third, we found that 81.8% of the studies used laboratory experiments and only 22.4% used field data. Fourth, more advice research has been published in journals indexed in ISI as psychology (67.1%) than in journals with the ISI index management (32.9%; journals can be indexed in more than one ISI category), with the most popular outlets being Organizational Behavior and Human Decision Processes (22 articles) and Journal of Behavioral Decision Making (18 articles). Finally, about half of the articles in the sample were published between 2006 and 2015 and about half between 2015 and 2020, which suggests a growing interest in advice research.

Cluster Analysis

The article meta-data also allowed us to structure the research more clearly. To this end, we conducted a k means analysis on the 143 articles in our final sample. A scree plot suggested that our sample contained three clusters (see Online Supplemental). The largest cluster, behavioral research in management, featured primarily experimental work focused on advice utilization conducted by researchers in business schools and related departments. It included 70 articles, which we label with the † symbol in the core sections of our review. The second cluster, behavioral research in psychology, also featured experimental work focused on advice utilization, but this research was mostly conducted in psychology departments. In the core sections of our review, we label the 51 articles in this cluster with the ‡ symbol. The third and final cluster, on the other hand, featured exclusively field studies and focused on advice solicitation. We label the 22 articles in this organizational research cluster with the § symbol in the core sections of our review. Table A1 provides a detailed breakdown of the three clusters; for further details, please refer to our OSF repository (Kämmer et al., 2022).

Two Streams of Advice Research

Importantly, the three clusters in our article sample reveal two—not three—major streams of advice research. Not only do the two larger clusters feature experimental research focused on advice utilization, but they also share a distinct theoretical and methodological approach and many other key characteristics that we outline in the next paragraph. Ultimately, they are best described as a single stream of behavioral research. The third cluster, which we describe in more detail in the following paragraph, constitutes a separate stream of organizational advice research (Table 1).

Behavioral researchers aim to establish causality by manipulating independent variables in the controlled environment of the laboratory, specify an optimal or normative standard for a given task, and derive prescriptive implications (Moore & Flynn, 2008). In a typical behavioral study, participants are asked a set of quantitative questions. They are then presented with the

ADVICE-BASED DECISIONS

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Comparison of Typical Features of Behavioral and Organizational Advice Research

Feature	Behavioral research	Organizational research
Objective	Reveal psychological mechanisms	Understand organizational complexities
Key stages studied	Advice utilization (Stage 2), outcomes of advice-based decisions (Stage 3)	Advice solicitation and provision (Stage 1), outcomes of advice-based decisions (Stage 3)
Focus	Descriptive, comparison to normative benchmarks	Descriptive
Method	Experimental lab or online studies	Field studies, surveys, interviews, archival analyses
Procedure	Decision maker indicates their opinion, receives an advisor's opinion, and then revises their initial opinion	Post hoc recall of advice situation
Typical decision tasks	Quantitative judgments, multiple choice questions	Decisions on strategies, products, innovations
Type of decision maker	University students, laypeople	Professionals, managers, CEOs, top management teams
Types of advice	Recommendations for a given alternative, numerical estimate, additional information, guidance on how to decide	Judgments and opinions about strategies, recommendations for a specific option or course of action
Type of advisor	Anonymous participants	Internal or external to the organization
Outcome variables	Individual-level outcomes (e.g., decision accuracy, confidence, learning)	Organizational-level outcomes (e.g., firm performance, innovativeness)
Exemplary studies	Dalal and Bonaccio (2010)‡; Gino and Moore (2007)†; Hütter and Fiedler (2019)‡; Schultze et al. (2017)‡; Yaniv and Choshen-Hillel (2012b)‡	Alexiev et al. (2020) [§] ; Heyden et al. (2013) [§] ; McDonald et al. (2008) [§] ; Van Doorn et al. (2017) [§] ; Vestal and Guidice (2019) [§]

Note. Stages refer to our three-stage model of advice-based decisions (see Figure 1). The symbols denote the articles' cluster: † labels behavioral research in management, ‡ labels behavioral research in psychology, and § labels organizational research.

opinion of one or more anonymous peers (i.e., they receive "advice") and are asked for a revised estimate. Note that participants in most behavioral studies do not have a say in whether they receive such advice but are instead simply exposed to it (Van Swol et al., 2017). The final estimates are often compared with a normative benchmark (e.g., equal weighting) to assess the effectiveness of advice utilization. Decisions are typically made within minutes. Participants usually work individually and act as private individuals without an organizational function or position. Indeed, the decision maker and advisor normally interact anonymously and do not share a joint past or future. Finally, the consequences for the decision maker are often limited to a performance-dependent monetary payoff awarded immediately after the experiment.

Organizational researchers, on the other hand, focus primarily on descriptive aspects of the advice-seeking process within organizations. Faced with the uncertainty and complexities that characterize real organizations, they often study multilevel effects or the interplay between

variables and context. Participants in organizational studies are usually business professionals (e.g., managers, top management teams [TMTs], and CEOs). Advice may come from single advisors or from larger advice networks, and the decision process may involve numerous steps and take several months. The methods of organizational research include archival analyses, field studies, interviews, and surveys, and articles often combine more than one of these methods. In a typical study, professionals are asked to indicate the extent to which they sought advice from various sources in a particular situation and to provide information on other variables of interest such as firm performance or innovativeness. The decision maker and advisor usually know each other or interact directly. Also, they frequently share a past or a future relationship and have roles within an organization. Finally, organizational advice research has tended to focus on decisions that involve nonmonetary costs such as time, status, or loss of reputation.

In sum, our article sample features two broad streams of empirical advice research, one behavioral and the other organizational. In the following, we explore these two streams of advice research in much greater detail and discuss how they relate to the three stages of advice-based decisions.

Stage 1: Advice Solicitation and Provision

The first stage in our model deals with the solicitation and provision of advice. The key research questions associated with this first stage have been what motivates decision makers to solicit advice, when they seek advice, from whom they seek advice, and what kind of advice they look for. A few articles also examined how and why advisors provide advice. We organize the answers found in empirical advice research around three broad themes: the environment that the advice-based decision is made in, the decision maker who receives the advice and ultimately makes a judgment or a choice, and the advisor who provides decision-relevant information. Table 2 provides a high-level summary of the findings.

The Environment

Risk and Uncertainty

In environments characterized by risk and uncertainty, advice may provide relevant new information, help overcome knowledge gaps, and improve company performance. Indeed, organizational research has shown that when facing greater uncertainty, managers (Alexiev et al., 2011§; Heyden et al., 2013§) and entrepreneurs (Vissa & Chacar, 2009§) tend to seek more advice. This tendency has been corroborated by the behavioral literature, where participants in a laboratory study were more likely to seek advice for difficult tasks (Gino & Moore, 2007[†]). Not surprisingly, the price also matters and participants in one laboratory study were more likely to solicit advice when it was free than when they had to pay for it (Gino, 2008[†]).

At the organizational level, perceptions of rapid environmental change (e.g., in demand, competitors, regulations, or technology) led CEOs and TMTs to solicit external advice from sources outside their organizations, especially in organizations that lacked a climate of empowerment (Alexiev et al., 2020§). In contrast, in stable environments, CEOs tended to seek more internal advice (Heyden et al., 2013§), including advice from internal Delphi surveys (Förster & von der Gracht, 2014§).

The Social Environment

Behavioral advice research has also explored how the social environment affects advice solicitation. Participants in one study, for example, were more likely to seek advice from advisors who expressed positive feelings toward them than from advisors who were merely competent or experienced, despite their stated intentions to choose primarily based on competence (Hur et al., 2020[†]). Conversely, decision makers were less likely to seek advice when they feared that doing so might make them appear incompetent (A. W. Brooks et al., 2015⁺; Cojuharenco & Karelaia, 2020[†]). And as for giving advice, laboratory studies have suggested that providing advice can confer a sense of power on the advisor and that individuals with a high tendency to seek power are especially motivated to provide advice (Schaerer et al., 2018[†]).

A related line of studies has examined advice provision and solicitation in the presence of conflicts of interest. For instance, participants in laboratory studies who confronted a conflict of interest gave more biased advice when they served either multiple decision makers or decision makers who were unidentified rather than identified (Sah & Loewenstein, 2012[†]). They also gave more biased advice when they knew that the alternatives to their advice were poor (Sah & Loewenstein, 2015[†]) and when the selfish advice was presented along with an alternative that was overall inferior to it (Barneron & Yaniv, 2020[‡]). Some studies have suggested that disclosing conflicts of interest can also lead advisors to give more biased advice (e.g., Sah, 2019[†]), though others found no effect of disclosure (e.g., Ismavilov & Potters, 2013⁺).

Two organizational studies complement these results. In one study, senior executives expected more help from others in high-trust environments, particularly from advisors outside of their professional network (Miller et al., 2019†). In the other, task conflicts did not affect the likelihood of advice solicitation, but relationship conflicts decreased advice seeking (Marineau et al., 2018§). In sum, recent findings from both organizations and behavioral laboratories converge in pointing to the social environment as a key determinant of advice solicitation.

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Table 2

Key Factors That Affect the Extent of Advice Solicitation, Organized Around the Three Broad Themes From the Core Sections of the Review

Theme	Research question	Factor	Influence on advice solicitation	Example references
Environment	WHEN and WHY do decision makers solicit advice?	Uncertainty, task difficulty, environmental instability Advice for free Fear of appearing incompetent	Increase (external advice seeking) Increase Decrease	Alexiev et al. (2020) % ; Gino and Moore (2007)†; Heyden et al. (2013) % Gino (2008)† A. W. Brooks et al. (2015)†; Cojuharenco and Karelaia (7070) 8
	WHOSE advice and WHAT KIND of advice do decision makers seek?	Positive relations	Increase	Hur et al. (2020)†; Marineau et al. (2018)§
Decision maker	WHEN and WHY do decision makers solicit advice?	Overconfident Anxious Homogeneous top management teams	Decrease Increase Increase (external advice seekino ¹	Gino and Moore (2007)†; Soll and Larrick (2009)† Gino et al. (2012)† Alexiev et al. (2010) \$; Heyden et al. (2012) \$
Advisor	WHOSE advice and WHAT KIND of advice do decision makers seek?	Competent and warm Provides unique information Distant from decision maker's	Increase Increase Increase	Porath et al. (2015) Van Swol and Ludutsky (2007) Hütter and Ache (2016) ‡
		Internal advisor (vs. external; for moderators see text)	Increase	Alexiev et al. (2010 % , 2020 %); Heyden et al. (2012 % , 2013 %); McDonald et al. (2008) §
Note The symbol	ols denote the articles' cluster: ± labels b	bahavioral recearch in management	+ labels behavioral research in t	The combole denote the articles' cluster ± labels behavioral research in management = ± labels behavioral research in revolution, and 8 labels or or instituted research

Note: The symbols denote the articles' cluster: † labels behavioral research in management, ‡ labels behavioral research in psychology, and § labels organizational research.

The Decision Maker

Behavioral research has found that before decision makers solicit advice, many prefer to first seek information on their own (Schrah et al., 2006†). But afterward, which decision makers are more likely to solicit advice? Overconfident participants, for example, were less likely to solicit advice in laboratory studies (Gino & Moore, 2007†; Soll & Larrick, 2009†). In contrast, anxious participants were more likely to solicit advice (Gino et al., 2012†), as were students in a field study who were sensitive to being evaluated by others (Duan et al., 2022§).

In organizational settings, CEOs with longer tenures and CEOs with a greater need for cognitive closure were both found to be less likely to seek advice (Vestal & Guidice, 2019§). Other important decisions in organizations are made by TMTs. In one study, teams led by transformational managers were more likely to exchange advice because this leadership style encourages communication and the desire to improve within the team (Z. Zhang & Peterson, 2011§). Other studies found that heterogeneous TMTs often considered different perspectives on a problem and sought more "internal advice" from sources within the organization, whereas more homogeneous TMTs sought more "external advice" from outside sources to broaden their perspective (Alexiev et al., 2010§, 2020§; Heyden et al., 2012§, 2013§).

The Advisor

Whose Advice Is Solicited?

Organizational research has also examined why CEOs and TMTs at times prefer internal and at other times prefer external advisors. Advice from internal advisors, including managers within the organization, subordinates, or even the board of directors, has the advantage of being contextually relevant and relatively accessible and is thus frequently preferred (e.g., Alexiev et al., 2020§; Heyden et al., 2013§; Lomi et al., 2013§; McDonald et al., 2008§). Internal advisors who are perceived as competent and who treat others politely and respectfully have been found to be particularly attractive (Porath et al., 2015§). External advisors such as consultants or contacts at other firms, on the other hand, can provide an independent perspective that is unaffected by organizational pressures to minimize conflict or maximize consensus seeking (Heyden et al., 2013§).

Much early behavioral advice research asked whose advice decision makers solicit, and showed that accurate and confident advisors were seen as attractive (see Bonaccio & Dalal, 2006). In the last 15 years, fewer studies have sought to address this question. One study found that advisors are perceived as more attractive when they can provide "unique information" that they do not share with others (Van Swol & Ludutsky, 2007†). In another study, participants solicited more advice if the advice that they received was more dissimilar to their initial opinion (Hütter & Ache, 2016‡).

Advice Provision

Advice provision, in contrast, has become a more active area of behavioral advice research in recent years. When decision makers face choices under conditions of uncertainty, for example, advice appears to reflect primarily the advisor's, not the decision maker's, risk attitude (Hadar & Fischer, 2008[‡]). And there appear to be selfother differences. Participants in one experiment, for instance, were reluctant to provide their advisees with interesting, yet useless information even though they themselves were curious about such information when the roles were reversed (Barkan et al., 2016⁺). Also, advisors recommended that others behave more idealistically than they had themselves behaved in the same situation (Danziger et al., 2012⁺) and focused on desirability rather than feasibility (Lu et al., 2013[±]), possibly because the advisors viewed the decision problem from a greater psychological distance (Danziger et al., 2012[†]).

The types of advice that advisors provide often adapt to the demands of the decision maker. Advisors may offer recommendations regarding which of several options to choose (Barkan et al., 2016[†]; Barneron & Yaniv, 2020[‡]). For example, help in a negotiation process (Steinel et al., 2007[‡]), provide estimates of probabilities of different outcomes (Budescu & Yu, 2006[‡], 2007[‡]), or even social support (Dalal & Bonaccio, 2010[‡]). Nonetheless, numerical estimates remain the most widely studied type of advice in laboratory contexts (Rader et al., 2015[‡]; Yaniv & Choshen-Hillel, 2012a[‡]). In organizational settings, types of advice range from operational information critical for exploratory innovations, to recommendations for future innovation strategies, to assessments of current ones (Alexiev et al., 2010§; McDonald et al., 2008§).

Social Relations

A final set of studies examined advice provision from the perspective of the relationships between advisors and advisees. One study found participants more likely to provide unsolicited advice to friends they felt closer to than to more distant friends (Feng & Magen, 2016[‡]). Another study found that advisors tended to provide advice that more strongly supported a decision maker's beliefs when they expected the decision maker to be defensive rather than open-minded about these beliefs (Kastenmüller et al., 2013[‡]). Advisors with a greater need for self-presentation evaluated their own advice more favorably than advisors with less need for self-presentation (Harnish et al., 2012[‡]), and younger people showed a reluctance to give advice to older people (T. Zhang & North, 2020⁺).

Solicitation and Provision: The Bottom Line

Over the 15-year period covered by this review, behavioral and organizational research have both contributed to advancing our understanding of why and when decision makers solicit advice and whose advice they seek. Two key findings from early advice research have consistently been corroborated. First, uncertainty leads decision makers to seek advice, be it an uncertain or rapidly changing business environment (e.g., Alexiev et al., 2020§; Heyden et al., 2013§) or subjective uncertainty experienced by the decision maker (e.g., Gino & Moore, 2007†; Soll & Larrick, 2009[†]). Second, decision makers prefer advisors who have expertise and more closely resemble themselves. For example, advisors from within the organization are often preferred over external advisors (McDonald et al., 2008§). These consistent findings illustrate how advice research has begun to successfully consolidate important results.

Advice research has also evolved over the last 15 years. One new development is that the research has more frequently adopted the advisor's perspective, although more research on why and how advisors provide advice is needed. Another important development is that advice research has become more attuned to the social dimensions of advice solicitation and provision. This new focus is partly a contribution of organizational research, which inherently adopts a more social perspective and makes fundamental distinctions determined by how people relate to one another (e.g., internal vs. external advisors, Alexiev et al., 2011§; McDonald et al., 2008§). Behavioral researchers have also complemented their traditional, more cognitive constructs such as expertise and confidence with more social–emotional constructs such as humility and likeability (e.g., A. W. Brooks et al., 2015†) and have begun to study aspects of the social environment such as conflicts of interest (e.g., Sah & Loewenstein, 2012†).

Stage 2: Advice Utilization

The second stage in our model concerns the utilization of advice. Research on this stage explores when, how, and why decision makers make use of the advice they receive, whose advice they use, and what factors influence advice utilization. As before, we organize the empirical findings around three broad themes: the environment, the decision maker, and the advisor (see Table 3).

The Environment

Quantitative Judgments

Much research on advice utilization has examined the weight decision makers place on advice in quantitative estimation tasks. Early behavioral advice research found that decision makers exhibit "egocentric discounting" in this task environment, placing more weight on their own estimates than on their advisors' (Bonaccio & Dalal, 2006; Yaniv, 2004). Numerous studies of estimation tasks have since consolidated this finding and have shown that, on average, decision makers adjust about one-third of the distance from their initial estimate to the advisor's (Ecken & Pibernik, 2016†; Minson et al., 2011†; Soll & Larrick, 2009†; Soll & Mannes, 2011†).

Behavioral researchers have also identified several environmental factors that influence the degree of egocentric discounting. First, decision makers placed a greater weight on others' estimates in more difficult or more complex estimation tasks, perhaps because they were less confident in their own ability in such an environment (Ache et al., 2020[†]; Gino et al., 2012[†]; Gino & Moore, 2007[†]; Schrah et al., 2006[†]). Moreover, decision makers placed more weight on estimates that

Table 3

Key Factors That Affect the Extent of Advice Utilization, Organized Around the Three Broad Themes From the Core Sections of the Review

Theme	Research question	Factor	advice utilization	Example references
Environment	WHEN, HOW, and WHY do decision makers use advice?	Task difficulty	Increase	Ache et al. (2020)†; Gino and Moore (2007)†; Schrah et al. (2006)†
		Having to pay in advance	Increase	Gino (2008)†; Patt et al. (2006)†
		Quantitative estimation task (vs. choice task)	Decrease	Ecken and Pibemik (2016) \ddagger ; Minson et al. (2011) \ddagger
	What FACTORS influence advice	High power	Decrease	See et al. (2011) [†] ; Tost et al. (2012) [†]
	utilization?	Disclosing conflicts of interests	Increase	Sah, Loewenstein, et al. (2013) [†] ; Sah et al. (2018) [†]
Decision maker	WHEN, HOW, and WHY do decision makers use advice?	High confidence	Decrease	Gino and Moore (2007)†; Olsen et al. (2019)†; See et al. (2011)†
		Preexisting opinions	Decrease	Koehler and Beauregard (2006) [†] ; Yaniv and Choshen- Hillel (2012a) [‡]
		Being in a group	Decrease	Kim et al. (2020) [†] ; Minson and Mueller (2012) [†] ; Schultze et al. (2019) [‡]
Advisor	WHOSE advice do decision makers	Expertise	Increase	Schultze and Loschelder $(2021)\ddagger^{a}$; Reyt et al. $(2016)\ddagger$
	use?	Agreement between advisors	Increase	Budescu and Yu (2006 [‡] , 2007 [‡]), Mannes, 2009 [†]
		Intermediate distance to decision	Increase	Ecken and Pibernik (2016) [†] ; Hütter and Ache (2016) [‡] ;
		maker's opinion		Moussaid et al. (2013) ; Schultze et al. (2015) ;
		Friend (vs. stranger); behavioral or	Increase	Chatterji et al. (2019) [§] ; Eggleston et al. (2015) [‡] ; Yaniv
		demographic similarity to decision maker		et al. (2011)‡
	What FACTORS influence advice utilization?	High confidence, good calibration	Increase	Gaertig and Simmons (2018) [†] ; Sah, Moore, et al. (2013) [†] ; Van Swol (2011) [†]

^a Our article sample includes a handful of articles that were in press or available as an online publication when we conducted the review in 2020. Although some of these articles were not published in their final (print) version until 2022, we kept them in our sample.

required them to pay, probably because they rightly or wrongly—inferred that price signaled quality (Gino, 2008⁺; Patt et al., 2006⁺). In another study, participants who interacted repeatedly with one another and switched back and forth between the roles of advisor and advisee also increased the weight that they placed on each other's estimates over the course of the experiment, which might reflect a form of reciprocity or social influence (Mahmoodi et al., 2018[‡]; see also Moussaïd et al., 2013[‡]).

Choice Tasks and Others

Other task environments have produced weaker evidence for egocentric discounting. In binary choices, for example, participants frequently adopted advice concerning the winning options in betting games (Lee & Dry, 2006[‡]; Vélez & Gweon, 2019[‡]), concerning math problems (Van Swol, 2011[†]), and concerning hypothetical managerial decisions that were both high priority and not urgent (Johnson & Johnson, 2017⁺). When required to forecast whether the price of a hypothetical stock would go up or go down, participants relied more strongly on advisors than warranted by their track records (Leong & Zaki, 2018[‡]). Moreover, participants predicting the size of a herd of cows based on multiple cues in a farming simulator placed similar weights on their own and their advisor's opinions (Läpple & Barham, 2019⁺). And participants using multiple cues to predict stock performance in a stock market simulation appeared to treat "social" cues about advisor reliability much as they treated other "nonsocial" cues and appeared to integrate the two types of cues (Collins et al., 2011[‡]). Another study found similar results in the Iowa gambling task, a paradigm in which participants repeatedly choose from several payoff distributions that are initially unknown to them: Participants generally utilized advice and appeared to integrate the advice with their own reinforcement learning (Biele et al., 2009[‡]).

Social Environment

Behavioral advice researchers have also studied how the social environment affects discounting and advice utilization. In one experiment, participants who were ostracized and excluded by their peers were found to utilize advice less, even when it came from advisors who were not among the ostracizing peers (Byrne et al., 2016‡). Another powerful laboratory finding showed that participants randomly assigned to have greater power tended to utilize advice less than those with less power (See et al., 2011[†]; Tost et al., 2012[†]; though Van Swol et al., 2019[†] replicated this effect only for advice that a decision maker had explicitly turned down but then nonetheless received). In line with this finding, professionals who self-reported to be more powerful in their organizations were rated as less likely to utilize advice from their coworkers (See et al., 2011[†]).

A final research program examined biased advice, after an influential study found that decision makers may not sufficiently discount advice from advisors with conflicts of interest (Cain et al., 2005; see also Bonner & Cadman, 2014[†]). This research found that disclosing conflicts of interest can increase the utilization of biased advice when a decision maker interprets the disclosure as an implicit request to satisfy the advisor's personal interests (Sah, Loewenstein, et al., 2013^{+}), when the decision maker views the disclosure as a cue for expertise (Sah et al., 2018^{\ddagger}), or when the decision maker fears that rejecting the advice could be interpreted as signaling distrust (Sah et al., 2019⁺). Conversely, participants discounted useful, high-quality advice when there were conflicts of interest (Sah & Feiler, 2020⁺).

The Decision Maker

Who Utilizes Advice?

The question of who is more (or less) likely to utilize advice was central to early behavioral advice research (Bonaccio & Dalal, 2006) and has continued to be examined in more recent studies. Baseline utilization appears to be largely determined by the decision maker's preexisting opinions. In several laboratory studies, participants who had not previously generated an initial estimate themselves made quantitative estimates that were closer to those provided by their advisors (Koehler & Beauregard, 2006⁺; Yaniv & Choshen-Hillel, 2012a[‡]). Explicitly asking participants to form an independent opinion after they had received an advisor's estimate, on the other hand, led them to adjust away from that estimate and to ultimately provide judgments that differed more from those of their advisors than the judgments of individuals who had formed independent opinions before seeing the advice (Rader et al., 2015[†]).

Cognitive Factors

Among the cognitive factors that determine advice utilization, the decision maker's confidence in their own judgment is perhaps the most important. Early behavioral advice research explored this factor extensively, but more recent research has further corroborated that more confident decision makers give less weight to advice (Gino & Moore, 2007⁺; Olsen et al., 2019⁺; See et al., 2011[†]; Soll & Larrick, 2009[†]; Tost et al., 2012[†]; Wang & Du, 2018[‡]). Confidence is often a valid cue to knowledge (e.g., Gino & Moore, 2007[†]), but it has also been found to affect advice utilization when it reflects other, extraneous influences. For instance, participants were more confident, and utilized advice less, when they were part of a group (Kim et al., 2020⁺; Minson & Mueller, 2012[†]) or when they perceived themselves to be more powerful (See et al., 2011⁺; Tost et al., 2012[†]). Sleep deprivation (Häusser et al., 2016[‡]) and the lack of a clear self-concept (Duan et al., 2021^{\ddagger}), on the other hand, have been found to reduce confidence and increase advice utilization. Confidence also affected whom decision makers listened to in matters of taste. For example, participants in one study who were more confident in rating how much they liked different pieces of music were also more likely to use advice from advisors with similar tastes and less likely to adhere to the average opinion (Yaniv et al., 2011[‡]). Moreover, the classic finding that overconfident decision makers utilize less advice has recently been replicated in perceptual tasks (Olsen et al., 2019⁺). In these perceptual tasks, research has also shown that confidence can serve as a powerful cue for inferring an advisor's judgment accuracy, even absent explicit performance feedback (Pescetelli & Yeung, 2021[‡]).¹

Emotions

Another factor that influences advice utilization is the decision maker's emotional state. To explore the effects of different emotions on utilization, behavioral advice researchers have induced specific emotional states in the laboratory via "incidental" manipulations that are not directly related to the advice-taking task. Inducing anxiety, for instance, made participants more likely to utilize advice (Gino et al., 2012†). Inducing incidental gratitude also increased advice utilization, whereas inducing incidental anger decreased utilization (Gino & Schweitzer, 2008†). Another study examined anger and shame as negative emotions, and gratitude and pride as positive emotions. The research found that negative emotions increased utilization when focused on the self and decreased utilization when focused on the advisor, as well as the inverse pattern for positive emotions (de Hooge et al., 2014†). Relatedly, inducing suspicion about an advisor's motives was found to have a similar effect to that of inducing negative emotions, decreasing advice utilization (Van Swol, 2009a†).

Individual Differences

More recently, behavioral research has examined how personality traits and other individual differences affect advice utilization. In one study, more narcissistic participants utilized advice less, particularly when controlling for extraversion (Kausel et al., 2015[†]). Other studies have found that more agentic decision makers are more likely to dismiss advice (Schultze et al., 2018[‡]), that decision makers with a lower need for cognition increase their utilization more in response to emoticons in advisory messages (Duan et al., 2018[‡]), and that selfish decision makers are more likely to act selfishly when receiving (selfish) advice (Coffman & Gotthard-Real, 2019⁺; Sapulete et al., 2014[†]). Participants aged 60 and older utilized advice more than those between the ages of 18 and 37, and older participants with poorer working memory and fluid intelligence were less sensitive to the quality of the advice they received (Bailey et al., 2021[‡]). Individual differences also appear to qualify the relation between power and utilization: Managers who construed their power as a responsibility were found to be more likely to take advice than those who construed their power as an opportunity (De Wit et al., 2017[‡]).

Explanations for Discounting

Recent behavioral research has also proposed a variety of explanations for why decision makers discount advice in estimation tasks. One simple explanation is that decision makers may not

¹ Our article sample includes a handful of articles that were in press or available as an online publication when we conducted the review in 2020. Although some of these articles were not published in their final (print) version until 2022, we kept them in our sample.

utilize advice optimally because they do not appreciate the accuracy benefits from combining independent pieces of information (Larrick & Soll, 2006[†]; Wanzel et al., 2017[‡]; Yaniv et al., 2009[‡]). Another explanation emphasizes that many studies provide unsolicited advice to decision makers, who may be reluctant to utilize advice that they had not asked for (Van Swol et al., 2017[†]). Other explanations implicate more specific cognitive processes. Thus, discounting may be the result of anchoring effects (Schultze et al., 2017[‡]), and it has been linked to intuitive and shallow (as opposed to analytic) processing (Godek & Murray, 2008[†]). Yet, another set of explanations focuses on how decision makers differ from their advisors. For instance, decision makers know the reasons for which they hold their own opinions, but often they do not know why their advisors hold theirs. This asymmetry may lead to egocentric discounting (Hütter & Ache, 2016[‡]; Milyavsky et al., 2017[‡]; Minson et al., 2011[†]; Yaniv et al., 2009[‡]; but see Trouche et al., 2018⁺). Decision makers may also believe that their opinion is more objective and informed than that of the advisor (Liberman et al., 2012) or may not trust the advisor (Van Swol, 2011⁺; Wang & Du, 2018[‡]). In line with these explanations, taking an outsider's perspective has been found to reduce egocentric discounting (Yaniv & Choshen-Hillel, 2012b[‡]), as has increasing the decision maker's trust in the advisor (Jodlbauer & Jonas, 2011[‡]; Schul & Peri, 2015[‡]). Other explanations for egocentric discounting emphasize that following advice can also have negative side effects. Decision makers might anticipate regret from changing their opinion based on bad (i.e., nonbeneficial) advice, for example, (Tzini & Jain, 2018[†]). Changing one's opinion could also lead to loss of control and negative affect (Baer & Brown, 2012[†]), and decision makers may fear appearing incompetent if they rely on others' advice (A. W. Brooks et al., 2015⁺). Finally, overweighting one's own opinion relative to other people's opinions can be adaptive if advisors provide unreliable information because their incentives do not align with the decision maker's (Trouche et al., 2018[†]).

Groups

Groups appear more reluctant than individuals to take advice. Several studies have found that groups of participants discounted advisors' quantitative estimates more strongly than individual participants, perhaps reflecting stronger initial opinions brought about by processes of withingroup consensus (Larson et al., 2020‡; Minson & Mueller, 2012†; Schultze et al., 2013‡, 2019‡). Moreover, individuals appear to successfully share more decision-relevant information when they act as advisors to a single decision maker than when they form part of a group that seeks a consensus decision (Van Swol, 2009b†).

The Advisor

Expertise

Early behavioral advice research identified perceived advisor expertise as a key driver of utilization (Bonaccio & Dalal, 2006). Recent studies in this line of research have found that advice that conflicts with information from other sources can both decrease and increase perceived expertise, as it lowers perceptions of accuracy but also signals judgment independence (Palmeira, 2020⁺), and have corroborated that perceived expertise is a function of both status and past performance (Onkal et al., 2016⁺). Communicating advice in abstract language has also been found to act as a cue to advisor expertise (Reyt et al., 2016⁺), as has the numerical precision of quantitative advice (e.g., estimating the length of the river Po at 366 km rather than 400; Schultze & Loschelder, 2021[‡]). Across all these studies, greater perceptions of advisor expertise were robustly associated with greater advice utilization (see also Moussaïd et al., 2017⁺). At the same time, other studies have emphasized boundary conditions that create dissociations between expertise and utilization. For example, participants in two studies utilized advice even when it was transparently of low quality (Fiedler et al., 2019[‡]; Schultze et al., 2017[‡]). Also, participants in a repeated forecasting task had overly optimistic expectations regarding advisor expertise and were slow in correcting their optimistic bias and reducing their reliance on the advice (Leong & Zaki, 2018[‡]).

Confidence

Advisor confidence, which early behavioral research had identified as crucial for utilization (Bonaccio & Dalal, 2006), has also seen continued interest. The recent research provides additional evidence that advice is utilized more readily when it comes from a confident advisor (Benjamin & Budescu, 2015[‡]; Gaertig & Simmons, 2018[†]; Sah, Moore, et al., 2013[†]; Stavrova & Evans, 2019[‡]; Van Swol, 2011[†]). But it has also qualified and added nuance to this finding in a variety of ways. Advisor confidence appears to matter more in estimating facts than in estimating tastes, for example, Van Swol (2011⁺). Another study found that advisors with complete information gave advice more confidently than advisors with incomplete information obtained from experiential learning, and that decision makers were more likely to utilize the former's advice because they were sensitive to this difference (Benjamin & Budescu, 2015[‡]). Decision makers do not appear to dislike advisors for expressing uncertainty per se (Gaertig & Simmons, 2018⁺), but they do judge advisors as less credible if they first express great confidence and then turn out to be incorrect (Sah, Moore, et al., 2013[†]). These findings suggest that advisors may not benefit from overstating their knowledge.

Social Qualities

Other behavioral advice research has moved beyond expertise and confidence to an advisor's social qualities. For instance, utilization appears to depend on perceived honesty. Participants in one study discounted advice more severely when they suspected intentional bias than when they suspected unintentional error (Haran & Shalvi, 2020⁺). Similarly, research showed that decision makers utilized advice more when they perceived advisors to be helpful and well-intentioned (Bonaccio & Dalal, 2010[‡]; Vélez & Gweon, 2019[‡]). For advice that cautions against potentially problematic behaviors (such as marital infidelity or drug use), however, being helpful was not enough-such cautionary advice was only likely to be utilized when coming from advisors who had both previously engaged in that problematic behavior themselves and had suffered negative consequences for doing so (Effron & Miller, 2015[†]). Furthermore, decision makers valued optimism in an advisor, although perhaps to a lesser degree than the advisor might have believed (Stavrova & Evans, 2019[‡]). Finally, utilization appears sensitive to what decision makers believe about the strategies by which their advisors give advice, illustrating how the give-and-take of advice can give rise to complex social inferences about, for example, advisor legitimacy (Effron & Miller, 2015†), expertise (Leong & Zaki, 2018‡), optimism (Stavrova & Evans, 2019‡), or helpfulness (Vélez & Gweon, 2019‡).

Similarity

A resemblance between advisor and advisee can also be important, especially in more subjective domains. For instance, participants in one study preferred the advice from (demographically) similar advisors when predicting their own future, but not when predicting other people's future (Gino et al., 2009⁺). In choosing music to listen to or films to watch, participants similarly preferred similar advisors (Eggleston et al., 2015[‡]; Yaniv et al., 2011[‡]). In yet another study, participants consciously avoided the pastimes and hypothetical restaurants that had been recommended by other participants with whom they thought they had little in common (Tuk et al., 2019[†]). Interestingly, the importance of similarity is among the rare findings on utilization that has also been studied and corroborated by organizational research: Founders of startups appeared to be more likely to accept the advice they received in a large-scale field experiment when it came from peers from the same geographic area (Chatterji et al., 2019§). Similarities in opinion also affect utilization. Initial laboratory studies using quantitative estimation tasks found that greater "opinion differences" between a decision maker's and an advisor's estimates yielded lower utilization (Yaniv & Milyavsky, 2007[‡]). More recent research has revealed a more nuanced picture, with participants in several studies being more likely to utilize quantitative estimates that were neither too close to nor too distant from their own initial estimates (Ecken & Pibernik, 2016[†]; Hütter & Ache, 2016[‡]; Moussaïd et al., 2013[‡], 2017[†]; Schultze et al., 2015‡).

Increasing Utilization

Recent behavioral research also points toward best practices for advisors who want their advice to be utilized. First, a laboratory study that analyzed advice interactions between pairs of friends found that the content of advice may matter more than who provided it, and that its feasibility and efficacy played a large role in explaining whether advice was utilized, as did politeness in its delivery (MacGeorge, Guntzviller, Hanasono, et al., 2016[†]). Second, explicitly labeling advice as such appears to help. In an experiment on social learning, participants imitated an advisor more frequently when the advisor's previous action on the same task was explicitly presented as advice to them, compared to when they merely observed the same previous action (Celen et al., 2010^{\ddagger}). Participants in another study tasked with predicting how much they would enjoy a film similarly preferred receiving explicit advice from a friend over information about how much their friend had liked the film (Eggleston et al., 2015[‡]). Third, good justifications can also increase utilization. Participants in two studies that manipulated whether advice was justified by formal analysis or instead by intuition tended to prefer the former, utilizing advice justified by intuitions only when they had strong reasons to believe that said intuitions were well-founded (Ribeiro et al., 2020⁺; Tzioti et al., 2014[†]). In another study, participants reported preferring additional information about the alternatives over direct recommendations for or against actions, likely because it helped them improve decision accuracy and maintain decision autonomy (Dalal & Bonaccio, 2010[‡]). Fourth and last among these best practices, a conversational analysis of recorded advice interactions found that to prevent dissatisfaction with their advice and to increase utilization, advisors should attempt to forestall sequences of extended resistance to their advice and should avoid appearing to know better than the decision maker how to resolve the decision problem (MacGeorge, Guntzviller, Branch, et al., 2016[†]).

Multiple Advisors

A final research program in behavioral advice research has sought to explain how decision makers utilize advice from multiple advisors. This research has corroborated earlier findings on how decision makers who have access to multiple pieces of advice from different advisors rely on the agreement between advisors as a cue to advisor expertise and accuracy (Budescu & Yu, 2006‡, 2007‡; Mannes, 2009†). Several studies found participants to be more likely to utilize the quantitative advice from advisors who provided similar estimates and to place more weight on such advice than on the advice from advisors whose estimates were more disparate (Wanzel et al., 2017‡; Yaniv et al., 2009‡). Other studies directly examined how decision makers utilized the advice from multiple advisors who provided a single, consensual "group" estimate. Results, however, have been inconclusive. Participants in some studies placed more weight on estimates provided by a group of advisors than on those provided by individuals (Larson et al., 2020[‡]; Mannes, 2009[†]), but other studies found no difference (Ecken & Pibernik, 2016⁺; Minson & Mueller, 2012⁺) or that participants perhaps even placed less weight on groups of advisors than on individual advisors (Schultze et al., 2013[‡]). In the only study that manipulated group size, individual decision makers appeared to be relatively insensitive to the size of a group of advisors in utilizing group advice (Mannes, 2009[†]).

Advice Utilization: The Bottom Line

Most research on advice utilization is behavioral and has been conducted in laboratory settings. It remains the most active area of advice research, and it is also the area that has probably changed the least when compared to earlier advice research. Many of the key themes identified by Bonaccio and Dalal (2006) over a decade ago have continued to receive considerable attention, such as the tendency for decision makers to egocentrically discount advice and the importance of both the decision maker's and the advisor's perceived confidence and expertise (e.g., Gino & Moore, 2007⁺; Soll & Larrick, 2009⁺; Yaniv et al., 2011[‡]). Overall, the more recent research has consolidated earlier findings on how and why decision makers use (or refuse to use) advice, has identified new boundary conditions and factors that influence advice utilization, and has continued to improve our understanding of the underlying psychology.

Perhaps the biggest new development is that much like solicitation research, utilization research has adopted a more social perspective. This change in perspective has not been primarily brought about by the influx of organizational advice research, which is often longitudinal and has found it difficult to convincingly measure and study utilization. Instead, behavioral researchers have themselves branched out to study how power (See et al., 2011†) and conflicts of interest (Sah, Loewenstein, et al., 2013†) affect utilization. They have also examined how utilization depends on the decision maker's emotional state (Gino & Schweitzer, 2008†) and how groups give and take advice (Mannes, 2009[†]; Minson & Mueller, 2012[†]). Some scholars have also begun to study the social inferences (Effron & Miller, 2015[†]; Leong & Zaki, 2018[‡]) and relational aspects (e.g., Bonaccio & Dalal, 2010; Milyavsky et al., 2017[‡]) of advice-based decisions.

A second important development is that some studies have abandoned the traditional estimation tasks for new paradigms such as repeated choice or forecasting tasks (e.g., Biele et al., 2009‡; Collins et al., 2011‡; Leong & Zaki, 2018‡). Interestingly, decision makers appear to be less reluctant to utilize advice in most of these new paradigms than in estimation tasks. Future research should clarify why this difference emerges and what it means for the generality of tendencies toward over- or underweighting advice.

Stage 3: Outcomes of Advice-Based Decisions

The third and final stage in our model concerns the outcomes of advice-based decisions. Our review found few articles focusing exclusively on this stage, but many articles with a focus on solicitation or utilization also measured one or more outcomes. More so than our treatments of solicitation and utilization, our discussion of outcomes thus emphasizes major themes and omits some articles in which outcomes were only a secondary concern. Common outcome variables included performance, confidence, and relational outcomes of advice-based decisions. As before, we organize the empirical findings around three broad themes: the environment, the decision maker, and the advisor (see also Table 4).

The Environment

Performance

Early advice research found that advice usually improves performance (Bonaccio & Dalal, 2006). The more recent behavioral advice research has corroborated this across a range of different laboratory tasks. In quantitative estimations, the evidence is robust. On average, participants make more accurate estimates when they have access to others' estimates (e.g., Ache et al., 2020†; Gino & Moore, 2007†; Gino & Schweitzer, 2008†; Läpple & Barham, 2019†; Mannes, 2009†; Minson et al., 2011†; Soll & Larrick, 2009†; Soll & Mannes, 2011†; Yaniv & Milyavsky, 2007‡). The availability of one piece of advice (vs. none) has been found to reduce estimation error in these tasks by about 20% (e.g., Yaniv, 2004). Advice also appears to help in other task environments, such as choosing between several options that provide probabilistic rewards (Biele et al., 2009‡; Vélez & Gweon, 2019‡), forecasting hypothetical stock prices (Leong & Zaki, 2018‡), negotiating (Steinel et al., 2007‡), or even predicting how enjoyable a song or a movie will be (Eggleston et al., 2015‡; Müller-Trede et al., 2017†; Yaniv et al., 2011‡).

Organizational advice research has focused on radically different performance measures but has also found that advice is generally beneficial. In one study, U.S.-based nonprofit organizations with CEOs who reported seeking more strategic advice showed higher growth in financial donations (Vestal & Guidice, 2019§). For-profit companies led by CEOs who self-reported seeking more strategic advice similarly showed higher returns on asset and market-to-book values (McDonald et al., 2008§). In another study, Indian software ventures showed higher revenue growth when they were led by entrepreneurial teams with more extensive advisor networks (Vissa & Chacar, 2009§). And in a recent field experiment, start-ups in India grew faster and were less likely to fail when their founders received advice from peers who encouraged them to institute regular meetings, set goals consistently, and provide frequent feedback to employees (Chatterji et al., 2019§). Several other studies found that advice benefits innovation (Alexiev et al., 2010§; Heyden et al., 2012§; Prasad & Martens, 2015§). The benefits of advice are not restricted to the organizational level, of course, and have also been documented for teams and individuals. For example, business units were found to generate more sales opportunities and greater total sales when their management teams had more extensive advice networks (Z. Zhang & Peterson, 2011§). Managers rated work groups with more extensive advice networks as more effective (Wong, 2008[†]). And combining different professionals' ratings of essays written for a college admission test yielded more accurate and more consistent evaluations (Barneron et al., 2019§).

Boundary Conditions

Finally, behavioral researchers identified two limits to the benefits of advice. First, participants in

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Table 4

The Effect of Advice on Decision Outcomes, Organized Around the Three Broad Themes From the Core Sections of the Review I

			Effect of utilizing advice	
Theme	Research question	Outcome measure	on outcome measure	Example references
Environment	How does advice affect	Accuracy	Increase	Ache et al. (2020)‡; Gino and Schweitzer (2008)†;
	PERFORMANCE?			Müller-Trede et al. (2017) [†]
			Decrease (if advice is of poor quality)	Fiedler et al. (2019)‡; Hütter and Fiedler (2019)‡;
				Schultze et al. (2017)
		Firm performance, survival Increase	Increase	Chatterji et al. (2019) [§] ; McDonald et al. (2008) [§] ;
				Vestal and Guidice (2019)
		Innovation	Increase	Alexiev et al. (2010) [§] ; Heyden et al. (2012) [§] ; Prasad
				and Martens (2015)
		Group effectiveness	Increase	Wong (2008)†
Decision	How does advice affect	Perceived competence	Increase	A. W. Brooks et al. (2015) [†] ; Cojuharenco and
maker	PERFORMANCE?			Karelaia (2020) [†] ; Stavrova and Evans (2019) [‡]
		Creativity, innovativeness	Increase	Li et al. (2018) § ; Van Doorn et al. (2017) §
	How does advice affect	Confidence	Increase	Budescu and Yu (2006)‡; Schultze et al. (2018)‡; Van
	CONFIDENCE?			Swol and Ludutsky (2007) [†]
			Decrease (if advisors disagree)	Budescu and Yu (2007) ; Yaniv et al. (2009) ;
Advisor	What are its RELATIONAL	Sense of power	Increase	Schaerer et al. (2018) [†]
	outcomes?			
		Legitimacy	Decrease (when advice leads to	Heyden et al. (2013)§ (but see Palmeira et al., 2015†)
			underperformance)	
	the descent of the second of the second s	a ai donocoor lonoirroded cledol :	democrate for ded after de	للد مسالعات استعنافه المنتقاعة المنتقبة الملامين مستعملين الملامات الملامين المنافعا الملامية المنافع مستقاد المنتقد المنافع

Note: The symbols denote the articles' cluster: † labels behavioral research in management, ‡ labels behavioral research in psychology, and § labels organizational research.

ADVICE-BASED DECISIONS

laboratory experiments rarely completely ignore advice—so when the advice is of sufficiently poor quality, it has been found to harm performance in estimation tasks (Fiedler et al., 2019‡; Hütter & Fiedler, 2019‡; Schultze et al., 2017‡). Second, participants usually do not utilize advice in estimation tasks optimally and thus fail to capitalize on some potential performance gains compared to benchmark models such as simple averages (Larrick & Soll, 2006†; Mannes, 2009†; Soll & Larrick, 2009†; Yaniv & Choshen-Hillel, 2012a‡, 2012b‡; Yaniv & Milyavsky, 2007‡).

The Decision Maker

Confidence

Research on the effects of advice on decision makers themselves has focused primarily on effects on decision maker confidence. Many behavioral studies have measured confidence as an outcome variable, and they have generally found that utilizing advice increases decision maker confidence (e.g., Bonaccio & Dalal, 2010; Budescu & Yu, 2006[‡]; De Wit et al., 2017[‡]; Lee & Dry, 2006[‡]; Moussaïd et al., 2013[‡]; Schultze et al., 2018‡; See et al., 2011†; Van Swol & Ludutsky, 2007[†]). Increases in confidence often go hand in hand with increased accuracy from utilizing advice but have also been documented when advice did not translate to more accurate judgments (Wanzel et al., 2017‡; Yaniv & Choshen-Hillel, 2012b[‡]; Yaniv et al., 2009[‡]). Under specific conditions-that is, when advisors disagree (Yaniv et al., 2009[‡]) or when the advisors themselves lack confidence (Budescu & Yu, 2007[‡])—advice can even reduce confidence.

Social Outcomes

Recently, several behavioral studies have begun to examine the relational outcomes that decision makers can experience from advice solicitation and utilization. For instance, advisors in several experiments consistently perceived decision makers who sought their advice as more competent, humble, and more likable than decision makers who did not seek advice (A. W. Brooks et al., 2015[†]; Cojuharenco & Karelaia, 2020[†]; Stavrova & Evans, 2019[‡]). Leaders whose competence is in doubt must be careful, however, as they may be perceived as less competent when asking for advice (Cojuharenco & Karelaia, 2020[†]). Research has also shown that advisors perceived decision makers who disregarded their advice, despite being less competent, as arrogant (Milyavsky et al., 2017‡), and that they imposed social penalties on decision makers who disregarded advice or merely consulted additional advisors (Blunden et al., 2019†). Manners, however, can help: Advisors reacted more positively to decision makers who rejected their advice when the decision makers expressed their gratitude (Belkin & Kong, 2018†). Last, advisors generally want their advice to be considered, but they may not continue to give advice to decision makers who give either too little or too much weight to their advice (Ache et al., 2020†).

Organizational advice research adds a handful of findings on how seeking and taking advice can affect decision makers. One study found that advice can boost decision makers' creativity (Li et al., 2018§), and another suggested that advice can reduce adverse effects from illusion of control bias (Meissner & Wulf, 2016§). Also, TMTs may leverage advice to bolster the proactivity and innovativeness of their strategic decision making (van Doorn et al., 2017§).

The Advisor

If research on how advice-based decisions affect decision makers is scarce, research on how they affect advisors is scarcer. Our sample includes only three recent articles-two behavioral and one organizational-that measure advisor characteristics as outcome variables. In the former, giving advice was found to increase advisors' motivation to act in line with their own recommendations (Eskreis-Winkler et al., 2018§) and to enhance their (sense of) power (Schaerer et al., 2018[†]). The latter found that giving advice has positive effects on creativity, much like receiving advice does (Li et al., 2018§). Three additional studies examined relational outcomes from the advisor's perspective. Two organizational studies suggested that giving advice has its perils, as advisors may become scapegoats when companies underperform (Heyden et al., 2013§) or when they endorse selfishness (Coffman & Gotthard-Real, 2019⁺). But there is a silver lining for advisors: Decision makers were shown to be more likely to attribute their successes to their advisors and to take the blame themselves for their failures (Palmeira et al., 2015[†]).

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Outcomes of Advice-Based Decisions: The Bottom Line

Most of the research on advice-based decisions that measures outcomes is concerned with measuring performance. Across a broad range of task environments and performance measures, both behavioral and organizational researchers have found that advice is beneficial (e.g., Gino & Moore, 2007[†]; Larrick & Soll, 2006[†]). Interestingly, most studies simply compared advice-based decisions to identical decisions without the advice, so the performance benefits may reflect primarily the informational value that advice offers. Other outcome measures are less common, except decision maker confidence, which typically increases in advicebased decisions (e.g., Budescu & Yu, 2006‡). More recent studies have begun to examine social and relational outcomes for both the decision maker and the advisor (e.g., A.W. Brooks et al., 2015[†]; Cojuharenco & Karelaia, 2020[†]; Li et al., 2018§). This new, more social perspective appears a promising avenue for future advice research, not least because considering additional outcomes-and ones that likely matter to decision makers-has the potential to cast existing findings on advice solicitation and utilization in a new, more nuanced light.

General Discussion

This article provides a comprehensive review of the empirical research on advice-based decisions published in management and psychology between 2006 and 2020. It is the first systematic review that brings together advice research from these two fields, and it covers 143 articles that speak to each of the key stages of advicebased decisions. The breadth of our review puts the diverse and often disparate results from the two fields into context. It also allows us to identify key findings that can be consolidated, highlight opportunities for crossfertilization, and identify open questions for future research.

Our first key insight is that advice research in psychology and management consists of two distinct streams. The larger stream, behavioral research, is concerned primarily with how decision makers use advice and how well they utilize it. It relies mostly on experimental laboratory studies and has been published in both management and psychology journals. The second stream, organizational research, is concerned primarily with when and why managers seek advice. This literature reports mostly observational field studies and has been published predominately in management journals. A cluster analysis based on the articles' content features (e.g., study type, model stage) and meta-data (e.g., journal, authors' affiliations) allowed us to classify 121 articles as behavioral research (with 70 management and 51 psychology articles), and 22 articles as organizational research.

To organize the findings from the two research streams, we have conceptualized advice-based decisions as a three-stage process consisting of advice solicitation and provision, advice utilization, and the outcomes of advice-based decisions. This simple model has enabled us to corroborate results of the clustering analysis, contrast the empirical results from the two streams of research, and clarify the theoretical positions that each adopts. Behavioral and organizational advice research emerge as markedly different paradigms that do not lend themselves to simple harmonization or integration. But their juxtaposition provides clear pointers both for novel empirical questions and for the development of novel theoretical and conceptual insights, as we discuss in greater detail below. We therefore view our intuitive stage model of advice-based decisions as both a modest theoretical contribution of its own and, more importantly, a catalyst for further theory development.

Our second key insight concerns several core findings that can be consolidated across the two streams of advice research, regardless of the differences between research questions, assumptions, and paradigms. The overall picture that emerges is encouraging: Advice generally helps. An impressive collection of empirical results from both the laboratory and the field documents its robust benefits. Boundary conditions existadvice can be harmful when advisors mislead their advisees or even just resemble them too closely. Still, decision outcomes generally tend to improve with advice, whether judgment accuracy is at stake, or innovativeness, or even firm survival. Regarding advice solicitation and utilization, the two streams converge to show that decision makers are more likely to seek and utilize others' advice when they are not themselves confident, and when they face challenging

or uncertain tasks. Both lines of research also agree that advice solicitation and utilization increase when advisors are experts and when advisor and decision maker trust one another. We summarize other important factors covered by both streams of research in Table 2. Together, these findings provide a well-founded, canonical description of the basic mechanics of advice-based decisions. We expect this canon to grow as the next decade of advice research replicates and consolidates (some of) the more recent findings reviewed here.

In the following sections, we discuss the key challenges that each research stream raises for the other. Then we discuss the scope and limitations of our analysis. Finally, we conclude by highlighting several topics that present promising opportunities for future study because they have not yet been satisfactorily addressed by either stream of research.

Challenges for Organizational Advice Research

First, the behavioral research we have reviewed often compared observed (utilization) behavior against various benchmarks. Indeed, behavioral research has been characterized as "specify[ing] what rational decision makers should have done, and the degree to which actual decisions deviate from the optimal choice" (Moore & Flynn, 2008, p. 400). Advice researchers in organizational research have been more reluctant to draw such comparisons, in part because the complex environments they study pose important challenges to both measuring performance and defining adequate benchmarks and normative theories. We acknowledge these challenges, not least because appropriate standards of comparison can be difficult to identify, even in the simplified environment of the laboratory (e.g., Bednarik & Schultze, 2015; McKenzie, 2003; Soll & Larrick, 2009). The potential upsides, however, are great, as careful benchmarking may allow organizational researchers to answer questions that are important but elusive, such as how much CEOs and other top managers should really listen to others.

Second, a central contribution of behavioral advice research is how it highlights the great potential of advice-based decision making, and the significant hurdles to realizing this potential. Even imperfect advice has been found to improve decisions, as errors average out when combined although this potential is not always realized in the behavioral laboratory. In the widely studied estimation tasks, for example, participants' accuracy gains often fall short of the gains associated with benchmarks such as simple averaging models (e.g., Larrick & Soll, 2006; Yaniv et al., 2009). Organizational research often implicitly assumes that advice that is solicited is also utilized, perhaps because decision makers in organizational settings often incur significant monetary or nonmonetary costs to obtain the advice they solicit. Although the assumption appears reasonable, it should be empirically tested, even if measuring utilization in the field can be challenging.

Challenges for Behavioral Advice Research

First, a key contribution of organizational advice research lies in how it highlights that professional decision makers are active advice seekers and explores the factors that determine whether they seek people's advice. Advice solicitation has played only a minor role in behavioral research thus far, and there is a clear need for further investigation. Behavioral researchers should leverage the controlled environments of their laboratories and begin to address questions such as how decision makers decide when and whom to ask for advice. A more systematic approach to studying solicitation in the laboratory could also shed light on what types of advice-for example, factual information, recommendations for or against an alternative, or even social support-decision makers seek under what conditions. This is an important open question that was emphasized 16 years ago by Bonaccio and Dalal (2006) but has yet to be answered.

Second, organizational research has found that decision makers are often sensitive to the source of advice and to the context in which it is solicited. Indeed, organizational research "endeavors to understand people in organizations—their motives, their decisions, their interpersonal relations, and the outcomes of their choices" (Moore & Flynn, 2008, p. 400). Decision makers in rapidly changing environments, for instance, have been found to be more likely to consult advisors who are more distant from their organizational and social environments (Alexiev et al., 2020). However, much behavioral advice research still relies on

the judge-advisor paradigm (Sniezek & Buckley, 1995), which presents unexperienced participants with unsolicited, quantitative advice from other, anonymous participants. In the field-in organizations and probably elsewhere-unsolicited advice from anonymous strangers plays only a minor role. In light of the pronounced sensitivity to source and context revealed by organizational research, we encourage behavioral researchers to extend their focus to the utilization of solicited (rather than unsolicited) advice and to use more flexible designs as well as more varied task environments. Recent studies of choice and forecasting tasks, for instance, raise the question of whether egocentric discounting is a general psychological phenomenon or is more narrowly associated with the quantitative judgment tasks it has traditionally been studied in.

Fundamental Challenges for Advice Research Across Fields

Our review also pinpoints aspects of advicebased decisions that have received less attention to date. For instance, merely 12% of the articles in our sample explicitly focus on the advisor's perspective. Instead, both behavioral and organizational advice research frequently portray advisors as passive "donors" of information. But when people consider giving advice, they face important choices. When should they give advice and to whom? How should they communicate their advice? How should they interact with those who seek their advice, and how should they react to decision makers when they follow or do not follow their advice? Recent studies point to some initial answers (e.g., Ache et al., 2020⁺; Blunden & Gino, 2018; A.W. Brooks et al., 2015; M. E. Brooks et al., 2014), but many important questions concerning advisors on both the individual and the organizational level remain unanswered and merit further research.

Research on the relationships between advisors and decision makers, and on social motivations in advice-based decisions more generally, is also incomplete. A handful of recent studies have made initial inroads (e.g., A. W. Brooks et al., 2015; Cojuharenco & Karelaia, 2020; Li et al., 2018; Milyavsky et al., 2017), but many open questions remain. For example, advice research should examine how the give-and-take of advice shapes intrateam relations and team functioning, a central unit of analysis in many organizational studies. The neighboring literatures on coaching (de Haan, 2019) and mentoring (Son & Kim, 2018), with their focus on long-term relationships, could provide useful inspiration to advice researchers on how to approach and study these questions.

Importantly, if social and relational outcomes matter to decision makers, they should have a bearing not only on the design of new studies but also on theory building. At the normative level, much behavioral research has benchmarked performance against averages of advisors' and decision makers' opinions. When accuracy is not all that the decision maker cares about, however, equal or performance-based weights might not be the "right" yardstick. A greater focus on relationships and social motivations should enable advice researchers to refine their normative standards of comparison for benchmarking advice-taking behavior. At the descriptive level, the novel focus on social and relational outcomes in advice research could (and should) also inform new theory development. Although many of the empirical studies we have reviewed were motivated by specific theoretical insights (e.g., potential reasons for egocentric discounting), the scope of these insights rarely extends beyond the article that they are proposed in. We suspect that this may partly reflect a reluctance by many advice researchers to adopt and work with theories proposed by other researchers, a phenomenon that has also been observed elsewhere in psychology (Borsboom et al., 2021; Mischel, 2008). This could also explain why the few advice theories with global scope that have been proposed have had a mostly local impact (e.g., MacGeorge, Guntzviller, Hanasono, et al., 2016, in communication research), and why previous calls for theory development have had limited success. Theory building may thus remain a truly fundamental challenge for future advice research, and addressing this challenge may require fundamental changes in how the research is conducted.

Last, more research is needed on how advice is integrated with information from other sources and on how advice availability affects the solicitation and utilization of information from other sources. The few studies in our sample that speak to these important questions suggest that decision makers may not process advice exactly like they process information from other sources (e.g., ignoring redundancies between advice and other types of information, Collins et al., 2011[‡]; or accounting for their advisor's intentions in interpreting the information, Trouche et al., 2018⁺), a finding that is echoed by recent research that suggests that people may differentiate between socially acquired information and information obtained from other (nonsocial) sources (Sulik et al., 2021; Winet et al., 2022). In the same vein, research on advice-based decisions must also position itself with respect to the growing literature on how people utilize algorithmic advice and recommendation systems (e.g., Logg et al., 2019; Nolan et al., 2016; Prahl & Van Swol, 2017), where social concerns may play a different and perhaps lesser role. Although we have intentionally excluded this work from our review to preserve our focus on decision-relevant opinions obtained from other people (see Introduction), the literature on algorithmic advice shares many questions and concerns with the research we have reviewed, and we believe that there could be a fruitful discussion among researchers in the different disciplines.

Scope and Limitations

To sharpen our focus on psychology and management, we consciously excluded several neighboring literatures from this review. The work on algorithmic advice (Logg et al., 2019; Prahl & Van Swol, 2017), coaching (de Haan, 2019), and mentoring (Son & Kim, 2018) that we have previously referred to is among these exclusions. We also excluded a handful of advice studies in neuroscience (e.g., Engelmann et al., 2012), and developmental psychology (e.g., Hagá & Olson, 2017), as well as applied advice research. Much of the latter was recently reviewed in the Oxford handbook of advice (MacGeorge & Van Swol, 2018b), which includes useful summaries of cross-cultural advice research (Feng & Feng, 2018), research on educational advice (Waring & Song, 2018), legal advice (McGinniss, 2018), and advice from health care professionals (D'Angelo & D'Angelo, 2018). By contrast, in reviewing the empirical literature on advice-based decisions in psychology and management itself, we have strived for completeness. Even so, we naturally do not cover all possible perspectives on recent advice research. Rader et al. (2017), for instance, focused on motivations to use advice, and on decision makers' misperception about advice. And Bonaccio and Dalal's (2006) review of early advice research discussed

measures of advice utilization in more detail. Future research could aim to integrate the research reviewed here with the adjacent literatures that we have omitted, and to reconsider the findings reviewed here from such additional perspectives.

Conclusion

Advice-based decisions are complex. Over the last 16 years, behavioral and organizational advice researchers have raised and answered many important questions about the give-andtake of advice in decision making. The consolidation and expansion of advice research that has taken place is a notable achievement, yet many questions still remain unanswered. We are optimistic that future advice research will provide new answers and are hopeful that these answers will draw on and leverage the combined findings from behavioral and organizational research.

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† denotes behavioral research in management.
 ‡ denotes behavioral research in psychology. § denotes organizational research.

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(Appendix follows)

Appendix

Table A1

Summary of the Article Metadata for the Full Article Sample and for Each of the Three Clusters of Advice Research

Variable	Full article sample	Behavioral research in management	Behavioral research in psychology	Organizational research
Number of articles	143	70	51	22
Label		Ť	‡	§
Stage 1: Solicitation and provision	42 (29.4%)	18 (25.7%)	8 (15.7%)	16 (72.7%)
Stage 2: Utilization	98 (68.5%)	54 (77.1%)	43 (84.3%)	1 (4.5%)
Stage 3: Outcomes	87 (60.8%)	33 (47.1%)	38 (74.5%)	16 (72.7%)
Focus: Decision maker	133 (93.0%)	66 (94.3%)	45 (88.2%)	22 (100%)
Focus: Advisor	21 (14.7%)	11 (15.6%)	10 (19.6%)	0 (0%)
Laboratory data	117 (81.8%)	66 (94.3%)	51 (100%)	0 (0%)
Field data	32 (22.4%)	8 (11.4%)	2 (3.9%)	22 (100%)
ISI Index "management"	47 (32.8%)	28 (40.0%)	5 (9.8%)	14 (63.6%)
ISI Index "psychology"	96 (67.1%)	46 (65.7%)	43 (84.3%)	7 (31.8%)
At least one author in an OB or management department	62 (43.4%)	47 (67.1%)	2 (3.9%)	13 (59.1%)
At least one author in another business school department ^a	8 (61.5%)	60 (85.6%)	11 (21.6%)	17 (77.3%)
At least one author in a psychology department	62 (43.4%)	8 (11.4%)	51 (100%)	3 (13.6%)

Note. ISI = International Scientific Indexing; OB = organizational behavior. The symbols denote the articles' cluster: † labels behavioral research in management, ‡ labels behavioral research in psychology, and § labels organizational research. ^a The other business school departments that were coded included the departments of business, decision science,

economics, marketing, and strategy.

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