How Patterns of Past Guidance Provision Affect Investor Judgments: 
The Joint Effect of Guidance Frequency and Guidance Consistency

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Abstract:
Theory suggests that the provision of voluntary disclosure, in itself, is informative to investors, but prior empirical research largely focuses on investors’ reaction to the content of disclosure. We extend the empirical literature on earnings guidance by experimentally examining how investors react to a firm’s historical pattern of guidance provision, holding constant guidance content. We examine two dimensions of guidance provision—how often guidance is provided (frequency) and whether guidance is provided for the same quarter(s) across consecutive years (consistency). We predict and find that investors are more confident in their earnings estimates and are more likely to invest if a firm’s historical guidance is consistent than if it is inconsistent, but these judgments differ significantly only when guidance frequency is low. Using a causal path model, we show that investors perceive inconsistent guiders as more opportunistic than consistent guiders, when guidance frequency is low but not when frequency is high. Our findings highlight the importance of examining the provision of guidance both for researchers and for practitioners.

Key words: guidance frequency, guidance consistency, investor judgments
I. Introduction

Earnings guidance has been identified as the most important source of financial information in capital markets (e.g., Ball and Shivakumar 2008), and has been studied extensively in both the theoretical and the empirical literature on voluntary disclosure (Beyer et al. 2010). Although disclosure theories suggest that, given its voluntary nature, the mere provision of guidance can be informative to investors (Einhorn and Ziv 2008, Beyer and Dye 2012), the empirical literature has largely focused on investors’ reaction to the content of guidance. In this paper, we experimentally examine whether and how investor judgments are affected by a firm’s historical pattern of quarterly guidance provision, holding constant key elements of guidance content. We focus on two dimensions of guidance provision: guidance frequency (how often guidance is provided) and guidance consistency (whether guidance is provided for the same quarters across consecutive years), which capture the level and variability of guidance provision respectively.1 We posit that both dimensions reveal important yet unique insights into managers’ guidance decisions and, thus, jointly affect investors’ judgments.

Survey evidence suggests that both guidance providers (managers) and guidance users (financial analysts) prefer that guidance, once initiated, should be maintained without interruption (Graham et al. 2005, MWW Group 2008).2 Guidance without interruption has two desirable features: (1) it is issued every quarter, thus frequently releasing information to the market, and (2) it is issued for the same quarters every year, thus exhibiting a consistent pattern that allows guidance users to easily anticipate the provision of guidance. However, archival

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1 Throughout this paper, “consistency” of guidance is defined as guidance being issued for the same quarters in consecutive years, following Tang (2014). Our definition of “consistency” focuses on the provision of guidance, as opposed to the content of guidance as in Hilary et al. (2014) and in Tan et al. (2010).
2 One of the CFOs in the Graham et al. (2005) survey likened the process of initiating a voluntary disclosure to “getting on a treadmill” from which it is tough to get off. Once initiated, “the market then expects the company to maintain the newly initiated disclosures every quarter, regardless of whether the news is good or bad.” (p.59)
studies show that guidance is often interrupted for various reasons and hence may not be frequent and consistent at the same time.\textsuperscript{3} Investigating the individual and joint effect of these two dimensions is important to both researchers and managers because it helps us better understand the impact on investors’ perceptions when firms’ guidance is interrupted in different ways.

In this study, we experimentally investigate the joint effect of guidance frequency and guidance consistency on two key investor judgments—their confidence in their earnings forecasts and their willingness to invest. For this research question, an experiment has at least three advantages over archival analysis. First, archival evidence suggests that many firms that guide frequently also guide consistently, making it difficult to disentangle the effect of these two dimensions of prior guidance provision (Tang 2014). Second, earnings guidance is increasingly bundled with earnings announcements (Rogers and Van Buskirk 2013), posing a challenge to isolate the impact of guidance from confounding information. Third, firms’ disclosure choices are likely driven by various factors that are unobservable in archival data, raising concerns of omitted correlated variables (Petroni 2003, Larcker and Rusticus 2010, Beyer et al. 2010). An experiment mitigates these concerns by varying guidance frequency independently from guidance consistency, while holding constant a firm’s information environment, thereby allowing us to cleanly identify the key judgment effects we seek to investigate.

We expect both guidance consistency and guidance frequency to positively influence investor judgments. But more importantly, drawing from research in psychology, we expect an interactive effect wherein guidance consistency has a greater impact when guidance frequency is

\textsuperscript{3} For example, firms might abandon guidance due to higher uncertainty or deteriorating performance (Houston et al. 2010, Chen et al. 2011), following top management turnovers (Brochet et al. 2011), or after missing analyst expectations or even their own guidance in the previous year (Feng and Koch 2010).
low than when frequency is high. Prior research in psychology suggests that people make weaker (stronger) judgments about an actor when the actor’s choices are seen as more (less) constrained (Fleming and Darley 1989, Miller et al. 1990). Applied to our setting, a high-frequency firm’s choice over its guidance pattern is likely viewed as more constrained than the choice of a low-frequency firm, because the high-frequency firm is perceived to have fewer choices. Therefore, we predict that a firm’s guidance consistency will have a weaker (stronger) impact on investors’ judgments when guidance frequency is high (low).

To test our prediction, we conduct a 2 × 2 between-participants experiment, wherein we manipulate guidance frequency (high vs. low) and guidance consistency (consistent vs. inconsistent) for a hypothetical firm and we randomly assign participants to one of four treatment conditions. As defined earlier, the consistent firm provides guidance always in the same quarter(s) each year whereas the inconsistent firm provides guidance in different quarter(s) each year with no discernible pattern (see Figure 1 for an illustration). The low-frequency firm provides guidance in three out of 12 quarters whereas the high-frequency firm provides guidance in nine out of 12 quarters. Importantly, across conditions, key elements of guidance content—guidance bias, guidance error, and the percentage of earnings beats/misses relative to guidance—are held constant to minimize any confounding effect of guidance content.

Our experiment proceeds in two stages. In Stage 1, we study participants’ investment judgments based on the firm’s guidance history (our guidance frequency and consistency manipulations) unconditional on any new guidance. Participants are provided with three years’ (i.e., twelve quarters’) history of actual earnings and guidance for a hypothetical firm. They are then asked to forecast earnings per share (EPS) for the upcoming quarter, rate their confidence in

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4 This relation between event frequency and the perceived number of choices is based on the availability heuristic (Kahneman and Tversky 1973), on which we elaborate in the next section.
their EPS forecasts, and indicate their willingness to invest in the firm. In Stage 2, we examine how our participants react to a firm’s guidance history *conditional* on new guidance, which is analogous to archival studies that examine how markets react to new guidance as a function of the firm’s guidance history (e.g., Stocken and Hutton 2009). Participants receive guidance from the hypothetical firm for the upcoming quarter, which conveys positive news. The guidance content is again held constant across conditions. After receiving this guidance, participants are asked to update their initial EPS forecasts. The *change* in their EPS forecasts from Stage 1 to Stage 2 is our primary variable of interest in Stage 2.

Results from Stage 1 are consistent with our predictions. We find that when guidance frequency is low, consistency in guidance patterns significantly increases investors’ confidence in their EPS estimates and their willingness to invest in the firm. However, when guidance frequency is high, guidance consistency has little impact on investors’ judgments. Using a causal path model, we show that, when guidance frequency is low, (a) investors perceive inconsistent managers to be more opportunistic than consistent managers, ⁵ (b) investors’ perceptions of opportunism are negatively correlated with their confidence in their EPS estimates, and (c) their confidence, in turn, is positively correlated with their willingness to invest in a firm. Overall, our results show that consistency and frequency of prior guidance provision jointly impact investors’ judgments even absent any current guidance content.

Results from Stage 2 indicate that both past guidance frequency and consistency are positively associated with investors’ expectation that they will receive guidance for the upcoming quarter. Not surprisingly, we find that investors respond to positive current guidance

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⁵ Following Beyer and Dye (2012), we refer to opportunistic disclosure as selective disclosure wherein managers intentionally withhold guidance in some periods. We measure investors’ perception of managerial opportunism as the extent to which they believe that past guidance omissions are due to managers’ *intentional* withholding of information. Section III outlines how we measure perceptions of opportunism in greater detail.
by positively revising their EPS estimates. However, the extent of this revision is inversely related to their expectation that they will receive guidance. This result suggests that the expectedness of guidance dampens rather than amplifies investors’ reaction to current guidance.\(^6\)

Our study contributes to the literature on earnings guidance in at least two ways. First, our findings highlight that an important but under-investigated feature of voluntary disclosure—the *pattern of past guidance provision*—is informative to investors, even when key elements of guidance *content* are held constant. Importantly, we show that guidance consistency has a greater impact on investor judgments when guidance frequency is low, as we predicted. Our causal path model suggests that investors’ attribute non-guidance to managerial opportunism when guidance frequency is low, but not when frequency is high, and this attribution, in turn, affects investors’ judgments. The effect of prior guidance provision—both frequency and consistency—on investors’ judgments both unconditional and conditional on the arrival of new guidance underscores the importance of considering the multi-period nature of guidance, as pointed out by Hirst et al. [2008].

Second, our study complements the empirical literature on investors’ reaction to guidance, which focuses on the effect of past guidance frequency and the magnitude of past guidance errors (e.g., Hutton and Stocken 2009), or the variability of past guidance errors (e.g., Hilary et al. 2014). Our results show that guidance consistency—another key dimension of prior guidance provision—significantly impacts investors’ judgments, particularly when guidance frequency is low. Our study also has implications for managers by highlighting the potential

\(^6\) We present participants with positive guidance in Stage 2 of our experiment. That is, the firm announces current guidance that significantly exceeds the firm’s prior period EPS. Therefore, our stage 2 results speak only to a firm’s positive guidance and may not generalize to settings where guidance is negative.
reputational costs of providing inconsistent guidance, particularly if they issue guidance infrequently.

In the following section, we review related research on earnings guidance and develop our hypotheses about the effect of guidance consistency and guidance frequency on investors’ judgments. Section III describes the experiment designed to test our hypotheses. Section IV presents the results of our experiment and section V concludes with a discussion of the study’s findings and implications.

II. Theory and Hypotheses

Prior research documents that earnings guidance is an important voluntary disclosure that plays a significant role in capital markets. Ball and Shivakumar (2008) and Beyer et al. (2010) show that investors find earnings guidance far more informative than earnings announcements.7 Although the theoretical literature on disclosure has long held that investors will update their assessment of firms based on the very presence or the absence of voluntary disclosures (e.g., Grossman and Hart 1980, Milgrom 1981, Einhorn and Ziv 2008, Beyer and Dye 2012), much of the empirical literature on earnings guidance focuses on investors’ reaction to guidance content rather than to guidance provision. Examples of this literature include how investors react to accurate versus inaccurate guidance (Ng et al. 2013; Hutton and Stocken 2009), biased versus unbiased guidance (Rogers and Stocken 2005; Hilary et al. 2014), or guidance that conveys good versus bad news (Hutton et al. 2003; Baginski et al. 2004). Following the theoretical literature, we expect the provision of guidance per se to be informative to investors, considering the voluntary nature of management guidance. Hence, in this study, we focus primarily on how investors react to the provision of guidance, while holding constant key elements of guidance

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7 Beyer et al. show that, on average, earnings guidance provides approximately 55% of the accounting-based information used by investors compared to a mere 8% provided by actual earnings announcements.
More specifically, we examine how investors’ judgments are affected by a firm’s guidance pattern that emerges from providing guidance over multiple periods.

We study investors’ reactions to guidance provided over multiple periods, as opposed to guidance provided in just a single period, for two main reasons. First, the practice of guidance provision is inherently a multi-period decision, as managers face this decision every quarter. Yet, there is little awareness in the existing literature of the implications of the multi-period nature of guidance (Hirst et al. 2008). Second, unlike in a single-period setting, a multi-period setting makes guidance provision more informative by allowing investors to form expectations of future guidance based on a firm’s guidance provided in the past (e.g., Einhorn and Ziv 2008; Guttman et al. 2014). In particular, we focus on two dimensions of a firm’s past guidance—guidance frequency and guidance consistency, which we elaborate next.

**Guidance Frequency and Guidance Consistency: Concept and Measurement**

Guidance frequency captures how often guidance has been provided over a certain period of time, whereas guidance consistency captures whether guidance has been provided for the same quarters across consecutive years. Prior studies typically classify firms with high (low) frequency of past guidance as “regular guiders” (“sporadic guiders”) (e.g., Rogers et al. 2009, Li et al. 2014), and document that investors react more strongly to guidance from “regular guiders” (e.g., Hutton and Stocken 2009). However, Tang (2014) introduces the guidance consistency measure and empirically shows that this new measure can better identify “regular guiders” than the conventional measure of guidance frequency. The intuition underlying the guidance consistency measure can be illustrated with the following example: Firm A, which always

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8 Our focus on guidance provision by no means dismisses or downplays the importance of guidance content.

9 Although the terminology varies slightly, most prior studies use guidance frequency as the basis to distinguish more versus less regular guiders. For example, Rogers et al. (2009) and Li et al. (2014) use the term “habitual” versus “sporadic” guiders; Cheng et al. (2005) use the term “dedicated” versus “occasional” guiders.
provides guidance in the first quarter of each year over a three-year period is likely to be viewed by investors as more predictable compared with Firm B, which provides guidance in a different quarter in each of those years, even though both firms issue guidance at the same frequency (i.e., one quarter per year). This example highlights that guidance frequency and guidance consistency represent two distinct (albeit related) constructs—while guidance frequency captures the level of guidance provided by a firm, guidance consistency captures the variability of guidance provision.

Moreover, Tang (2014) provides archival evidence that these two measures—guidance frequency and guidance consistency—do not always coincide. Table 1, adapted from Tang (2014), shows that less than 50% of frequent guiders (defined as firms guiding for at least three out of four quarters in the previous year) provide guidance in exactly the same quarters in the following year. Thus, frequent guiders are not necessarily consistent guiders. Similarly, infrequent guiders are not necessarily inconsistent guiders. More than a third of the infrequent guiders continue to provide guidance in the same quarters in the following year. These archival findings underscore the point that guidance consistency and guidance frequency represent different constructs and thus may have distinct impact on investors’ judgments, which is the focus of our study.

In the following sections, we first outline the main effects of guidance frequency and consistency on investor judgments. We then outline the theoretical rationale for our primary prediction that guidance consistency is likely to have a greater (lesser) impact on investors’ judgments when guidance frequency is low (high).

**Guidance Frequency and Guidance Consistency: Main Effects**
A vast body of research in psychology suggests that people encode and use frequency-related information in their judgments and decisions across several domains (see Zacks and Hasher 2002 for a comprehensive review). In a context similar to ours, Koonce and Lipe (2015) examine how investors react to firms’ benchmark-beating behavior and they find that investors’ judgments are positively influenced by the frequency of the beats (how often?) incremental to the magnitude of the beats (by how much?). Applied to our setting, this evidence suggests that investors evaluating a firm’s history of earnings guidance pattern will likely be positively influenced by how frequently a firm provides guidance.

Anecdotal evidence suggests that market participants value consistent guidance—survey evidence shows that sell-side analysts look unfavorably on firms that change their guidance policy (or suspend guidance) when providing guidance becomes difficult (MWW Group 2009). Scholars who study earnings guidance also exhort firms to provide guidance consistently—that is, provide guidance not only in good times, but also in bad times (Lev 2012). Managers, too, recognize investors’ preference for consistent guidance, as evidenced by surveys on voluntary disclosure in general (Graham et al. 2005) and earnings guidance in particular (Libby and Rennekamp 2015). Managers in both surveys indicate that it is important to stick to a disclosure precedent once initiated, and that failure to do so potentially has adverse consequences for the firm. Overall, the evidence suggests that both guidance frequency and consistency positively impact investors’ assessments of a firm. However, we do not make any main-effect predictions.

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10 When asked about the ramifications of suspending guidance for a firm, one of the responding analysts stated: “A wider (earnings guidance) range is acceptable, but changing policy on guidance is not. Management must still know how to run the business and (providing) guidance is part of demonstrating that knowledge.” (emphasis ours)

11 Although we define “guidance consistency” in a specific way in this paper, our definition is compatible with the idea that guidance, once initiated, should be maintained without interruption in both good and bad times (as in Lev 2012) and in difficult times (as in MWW Group 2009).
in view of the specific frequency × consistency prediction that we outline in the following section.

Interaction of Guidance Consistency and Guidance Frequency

Drawing from research in psychology, we expect an interactive effect wherein guidance consistency has a greater impact on investor judgments when guidance frequency is low than when frequency is high. Attribution theories from social psychology suggest that people make weaker (stronger) judgments about an actor when the actor’s choices are seen as more (less) constrained (Fleming and Darley 1989, Miller et al. 1990). In other words, less-constrained choices elicit stronger attributions whereas more-constrained choices elicit weaker attributions.

Applied to our setting, investors are likely to form judgments about a firm’s chosen guidance pattern based on their perception of how constrained that choice is. Tversky and Kahneman (1973) provide experimental evidence that this perception is systematically related to event frequency. They demonstrate this point in a simple setting: they ask participants how many committees of r members can be formed from a group of 10 candidates, where r is a number between 2 and 8. They predict that people would intuitively (but incorrectly) estimate that more two-member committees than eight-member committees can be formed out of 10 candidates, even though the number of committees that can be formed should be mathematically (and correctly) determined by the binomial coefficient \( \binom{10}{r} \) which is identical when \( r = 2 \) and \( r = 8 \).

Consistent with their prediction, participants estimate that approximately 65 committees can be formed with two people whereas fewer than 20 can be formed with eight people. This type of judgment wherein people systematically underestimate the total number of choices when

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12 Fleming and Darley (1989) and Miller et al. 1990) provide evidence that people make stronger dispositional attributions about experimental participants who write an essay when the essay is freely chosen, but weaker attributions when the essay is assigned
frequency is high based on the perceived availability is known as the “availability heuristic” and has been widely documented in various settings (Schwarz et al. 1991, Folkes 1988). We expect a similar process to operate when investors evaluate a firm’s guidance history.

Analogous to Tversky and Kahneman’s setting, a firm that provides guidance in nine out of 12 quarters (a high-frequency firm) should have the same number of choices over their guidance patterns as another firm that provides guidance in three out of 12 quarters (a low-frequency firm) because \( \binom{12}{3} = \binom{12}{9} \). However, according to the availability heuristic, investors are likely to systematically estimate a smaller number of choices available to the high-frequency firm than to the low-frequency firm. To the extent that the high-frequency firm is viewed as having fewer choices, any guidance pattern chosen by this firm is likely to be seen as more constrained than the choice made by the low-frequency firm. This perception of constrained choice, in turn, weakens investors’ judgments formed on the basis of whether the firm’s guidance pattern is consistent (or not).

In summary, we expect that, for a high-frequency firm, whose choice of guidance pattern is viewed as more constrained, the effect of guidance consistency (or lack thereof) on investors’ judgments and decisions is likely to be weaker than for a low-frequency firm, whose choice of guidance pattern is viewed as less constrained. Our primary predictions are formally stated below in the alternative form.13

**H1:** Guidance consistency will positively impact investors’ confidence (in their own EPS estimates) and this impact will be stronger when guidance frequency is low than when guidance frequency is high.

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13 We focus on investors’ confidence in their earnings estimates and their willingness to invest in the firm, as prior research identifies these variables as important judgments made by investors (Hirst et al. 1999, Han and Tan 2007, Rennekamp 2012). We do not make predictions about participants’ EPS estimates because we expect to see differences in participants’ confidence in their EPS estimates rather than in their EPS estimates per se, following Hirst et al. (1999).
**H2:** Guidance consistency will positively impact investors’ likelihood of investing in a firm and this impact will be stronger when guidance frequency is low than when guidance frequency is high.

*Causal Path Model*

To further explore the mechanism underlying our primary hypotheses (H1 and H2), we propose a path model explaining *how* a firm’s historical guidance pattern influences investor judgments.

As explained earlier, we argue that investors are likely to make stronger attributions based on managers’ past guidance patterns when guidance frequency is low than when frequency is high. We expect that investors will attribute opportunistic motives to managers who issue guidance selectively (i.e., managers who are inconsistent). Our expectation draws on disclosure theories which suggest that investors make inferences or attributions about whether managers opportunistically withhold guidance despite possession of information in some periods, based on their past guidance patterns (Einhorn and Ziv 2008; Beyer and Dye 2012). Link 1 in our path model reflects our expectation that investors will view inconsistent guiders as more opportunistic than consistent guiders, particularly when guidance frequency is low, as captured by the guidance consistency × guidance frequency interaction term.

Link 2 of our path model predicts that investors’ perceptions of managerial opportunism, in turn, should be negatively correlated with investors’ confidence in their own earnings estimates. Because investors use managers’ earnings guidance as an input in their own earnings estimates, investors are likely to be more confident in their estimates if they consider managers to be trustworthy rather than opportunistic (Davidson and Stevens 2012). Finally, Link 3 predicts
that investors’ confidence in their earnings estimates is likely to be positively correlated with their willingness to invest in a firm. This expectation is based on prior research suggesting that investor confidence in their earnings estimates is positively associated with their valuation and investment judgments (Hirst et al. 1999).

**Joint Effect of Past Consistency and Frequency on Investors’ Reaction to Current Guidance**

Our primary predictions (H1 and H2) relate to how investors react to a firm’s historical pattern of earnings guidance *unconditional on* any new guidance. Our next prediction examines how investors react to current guidance *conditional on* a firm’s historical guidance pattern. Theoretical models of disclosure suggest that a firm’s historical guidance pattern influences investors’ anticipation of current (and future) guidance (Einhorn and Ziv 2008, Beyer and Dye 2012). Investors are more likely to expect or anticipate current guidance from a firm that has issued either consistent or frequent guidance (or both) in the past. Conversely, investors are less likely to anticipate current guidance if the firm has been either inconsistent or infrequent (or both) in the past. This notion of investors’ anticipation of guidance provision highlights the importance of understanding not just the content of guidance but also the very act of providing guidance.

Prior research suggests that people find that unexpected good outcomes feel better than expected good outcomes (Shepperd and McNulty 2002). Positive violations of expectations, thus, are likely to result in more favorable reactions than communications that conform to expectations (Clor-Proell 2009). Applied to our setting, this argument suggests that when a firm provides guidance of good news, investors are likely to revise their earnings estimates upward to a larger extent if they are not expecting to receive the guidance than if they are expecting the guidance. Stated differently, expectedness of guidance dampens rather than amplifies investor
reaction to positive current guidance. This prediction is formally stated below in the alternative form:

**H3:** The extent to which investors update their earnings expectations in response to a firm’s *positive* guidance will be inversely related to the investors’ expectation that they will receive the guidance.

### III. Experiment

**Participants**

We recruit 120 individuals from Amazon Mechanical Turk (hereafter, AMT) to participate in our experiment.\(^{14}\) We do not focus on analysts because their earnings forecasts are influenced by their relationship with the firms they cover (Michaely and Womack 1999, Malmendier and Shantikumar 2014) and our experiment is not designed to investigate these relationships. Following Libby et al. (2002, p.802), we seek to identify an appropriate participant pool that matches participants to the goals of the experiment without using more sophisticated subjects than necessary to achieve those goals. Our participants from AMT represent individual investors, who are known to attend to firms’ historical guidance content (Hilary et al. 2014). Therefore, AMT participants meet the primary goal of our experiment, which is to test whether and how firms’ historical guidance patterns affect individual investors’ judgments. To ensure that our participants possess the knowledge required to complete our experimental task, we use the procedure outlined below.

To qualify for our study, our participants must fulfill two requirements: (a) they must have some background in accounting or finance to ensure that they understand the financial context of our study; and (b) they should, at a minimum, understand that earnings guidance is a

\(^{14}\) AMT is an online crowd-sourcing platform that matches “requesters” and “workers”. Requesters design and post tasks online with specified eligibility criteria, whereas workers complete these tasks in exchange for a fee (see Goodman et al. 2013 and Rennekamp 2012 for a more detailed discussion of AMT).
voluntary disclosure whereas earnings announcements are mandatory. To ensure that our participants meet these requirements, we devise a screening mechanism that contains five questions (participants are oblivious to which specific questions are used to screen eligibility and the eligibility criteria). The first two questions ask the participants to indicate the number of Accounting and Finance courses they have taken. The next two questions test their knowledge on whether earnings announcements and earnings guidance are mandatory or voluntary disclosures. Finally, we ask them about their work experience. Only participants who have taken at least two courses in Accounting or Finance and who correctly answer the questions about earnings announcements and earnings guidance proceed to the actual experiment. 581 participants check their eligibility to participate in our study based on the above criteria and 120 qualify. This screening mechanism provides some assurance that our participants’ knowledge is adequate for our experimental task.

Our participants from AMT, on average, have taken 2.8 courses in Finance and 2.6 courses in Accounting and have 13 years of work experience. Approximately two-thirds of our participants are male. It takes these participants an average of eight minutes to complete our experimental task, for which they receive two dollars as compensation, which amounts to an effective wage rate of $15 per hour.

**Experimental Manipulations**

The experiment employs a $2 \times 2$ full-factorial, between-participants design. The two manipulated variables are guidance frequency (high versus low) and guidance consistency (consistent versus inconsistent). Participants across conditions are provided a table that contains earnings guidance and realized earnings for three years (twelve quarters, starting with Q1 2010 and ending with Q4 2012). The presentation of our manipulations is similar to Tan et al. (2010),
but unlike their study, our primary interest is in how investors react to the *provision* of guidance rather than to the *content* of guidance. Given this focus, we hold key elements of guidance content constant across all four conditions.\textsuperscript{15}

Guidance frequency is manipulated as follows. In high frequency conditions, participants observe that a hypothetical firm named Alpha has provided guidance in nine out of twelve quarters (three quarters per year). By contrast, in low frequency conditions, Alpha has provided guidance only in three out of twelve quarters (one quarter per year). The choice of nine (three) quarters out of twelve quarters for high (low) guidance frequency is made to facilitate our next manipulation—guidance consistency.\textsuperscript{16}

We manipulate guidance consistency by either ensuring that guidance is provided for the same fiscal quarters over the three years (consistent conditions) or randomizing guidance across different quarters in each of the three years (inconsistent conditions). Depending on the guidance frequency manipulation, we carefully choose the fiscal quarters for which guidance is issued. In the “consistent–high frequency” condition, participants observe that Alpha always provides guidance for Q1, Q2, and Q3 in all three years. However, in the “consistent–low frequency” condition, Alpha provides guidance, but only for Q1, in all three years. In both conditions of

\textsuperscript{15} Specifically, the average guidance error (actual EPS – guidance) is zero across all conditions. Whenever there is a guidance error, we set half of the errors at +1 cent and the other half at -1 cent within each condition. Moreover, there is no difference across conditions in the percentages of times that realized earnings miss / exactly meet / exceed guidance. We choose to provide participants with the content of past guidance instead of just an indicator of whether or not guidance was issued in each quarter, because without providing guidance content, we cannot control participants’ assumptions about managers’ past guidance.

\textsuperscript{16} Consider an alternative firm providing guidance in twelve of the twelve quarters or none of the twelve quarters. In both cases, the guidance patterns are consistent by definition and thus cannot be manipulated to differ across conditions.
inconsistent guidance (high and low frequency), participants do not see a discernible pattern in Alpha’s guidance.

Procedure and Dependent Variables

Our experiment is administered in two parts. Part 1 contains background information and financial data over the past three years (twelve quarters) for Alpha—a hypothetical, well-diversified company engaged in industrial manufacturing. The summarized financial data include reported earnings per share (EPS) for each quarter (starting with Q1, 2010 and ending with Q4, 2012) and also EPS guidance for each quarter, if provided. Part 2 presents the EPS guidance for Q1, 2013. We choose a two-stage rather than a single-stage design because the objectives of the two stages of our experiment are different. Participants’ responses in the first stage offer us clean measures of their reaction to a firm’s historical guidance pattern, *unconditional* on any guidance news. In contrast, their responses in the second stage allow us to examine how they respond to the current guidance news, *conditional* on historical guidance. The content of guidance is held constant across conditions. Each stage thus offers a unique perspective on whether and how a firm’s guidance history potentially affects investors’ judgments.

Participants assume the role of potential investors contemplating an investment in Alpha’s common stock. They are told that Alpha has just announced its EPS for the latest quarter (Q4, 2012) and will host a conference call the next day. Participants are also informed that, whenever Alpha has provided earnings guidance in the past, it has done so during its conference call on the day after announcing its previous quarter’s EPS. We deliberately introduce ambiguity in Part 1 about whether or not Alpha will provide guidance for the upcoming quarter because we would like to elicit participants’ judgments about the likelihood of receiving guidance. After participants receive this background information (which is, so far, identical across conditions),
they are randomly assigned to one of the four conditions obtained by crossing the guidance frequency (high versus low) and guidance consistency (consistent versus inconsistent) manipulations as detailed in the previous section. Participants then provide the following judgments and assessments.

First, participants assess the likelihood of receiving earnings guidance for the upcoming quarter during the conference call scheduled on the next day on a scale from 0 to 100, with 100 (0) indicating that Alpha will definitely (definitely not) provide earnings guidance. Participants then provide their EPS estimates for the upcoming quarter (Q1, 2013) and indicate how confident they are in their estimates on a scale from 0 to 10, with 0 (10) indicating “Not at All Confident” (“Highly Confident”).

Next, we are interested in understanding how guidance affects investors’ decisions to invest in Alpha. To mitigate the effect of other factors (such as industry preferences etc.) on investment decisions, we ask participants to indicate the likelihood that they will invest in Alpha relative to its peers on a scale from 0 to 100, with 100 (0) indicating that they are more likely to invest in Alpha (Alpha’s peers) and 50 indicating that they are indifferent between investing in Alpha and investing in its peers. To focus on the effect of guidance, we inform our participants that Alpha’s peers do not provide any earnings guidance. We choose non-guidance as the peer-firm benchmark for two reasons. First, archival data suggest that most public firms are indeed non-guiders (see Anilowski et al. 2007, Roger and Van Buskirk 2013, Tang 2014). Second, non-guidance in all quarters is consistent by definition, so that our participants do not need to make

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17 We ask this question before asking our participants about our dependent variables for two reasons. First, asking participants about the likelihood that they will receive guidance in the next quarter potentially draws greater attention to both our guidance consistency and guidance frequency manipulations and allows for a more powerful experimental design. A similar approach is used by Hales (2007) and Hales et al. (2012) to reinforce the strength of their manipulations. Second, because our experimental context provides participants with historical earnings guidance, it is natural for them to immediately form an expectation about receiving earnings guidance in the future.
assumptions about the consistency of guidance issued by Alpha’s peers, thus allowing us to draw clearer inferences from participants’ investment decisions across conditions.18

Participants’ answers to this question (likelihood of investing in Alpha) and to the previous question (confidence in EPS estimates) constitute our two primary dependent variables. We ask participants for their EPS estimates first, followed by their confidence in this estimate, before asking about their likelihood of investing, because the EPS estimate typically precedes, rather than follows an investment decision (e.g., Brown et al. 2014).

The last question in part 1 seeks to investigate the process by which participants arrive at their judgments. This question asks the participants to allocate a total of 100 points among three possible explanations for why Alpha’s managers did not provide guidance for some of the past twelve quarters. Namely, the three explanations are: (1) Alpha’s managers did not have enough information to provide guidance in those quarters; (2) Alpha’s managers intentionally withheld guidance despite possessing enough information to provide guidance; and (3) Alpha’s managers were following Alpha’s established practice of skipping guidance in those quarters. Explanations (1) and (2) directly follow from the common reasons for non-disclosure provided in the theoretical literature (e.g., Dye 1985, Jung and Kwon 1988, Beyer and Dye 2012). We also provide explanation (3), considering the survey findings by Graham et al. (2005) that many managers seek to maintain their established disclosure practices. Of the three explanations, only explanation (2) implies that managers intentionally withhold guidance despite possession of information, which is viewed as opportunistic (Beyer and Dye 2012).

Part 2 begins with the conference call, in which Alpha’s management provides guidance for the upcoming quarter (Q1, 2013) by stating that their EPS for Q1, 2013 is expected to be 27

18 Other levels of guidance frequency (e.g., six quarters over the twelve quarters) could be consistent or inconsistent, thus confounding our guidance consistency manipulation.
cents, about 30% higher than the EPS for the same quarter in the previous year. Upon receiving this new information, participants are asked to provide their revised EPS estimates for Q1, 2013, and to indicate their confidence in their revised estimate. The experiment concludes with a set of questions testing participants’ comprehension of the experimental materials and obtaining demographic information.

IV. Results

*Manipulation Checks*

At the end of our experiment, we ask our participants two questions to assess whether they correctly acquire the key information related to our manipulations of guidance frequency and guidance consistency. First, we ask our participants to indicate the number of quarters in the past three years (i.e., twelve quarters) for which Alpha has provided earnings guidance. Overall, 90% of our participants respond correctly to this question, and this percentage does not differ significantly between the high and the low frequency conditions ($z = 0.31, p = 0.76$). Next, we ask them to indicate whether or not Alpha has provided EPS guidance consistently (for the same quarters from year to year) over the past three years. Overall, 93% of the participants respond correctly to this question. Again, this percentage does not differ significantly between the consistent and inconsistent conditions ($z = 0.76, p = 0.45$). Altogether, the vast majority of our participants appear to have correctly acquired the key information related to our manipulations. While our reported analyses are based on all responses, our inferences remain qualitatively the same if we exclude responses from participants who failed the manipulation checks.

*Tests of H1 and H2*

19 Part 2 of our experiment is directly related to archival studies of guidance (e.g., Hutton and Stocken 2009), which typically examine how investors’ reactions to the content of current guidance varies with a firm’s past guidance. This focus in Part 2 on investors’ reaction to guidance content supplements Part 1, in which investors do not observe any new guidance content.
H1 predicts that guidance consistency will positively impact investors’ confidence in their EPS estimates and this impact will be stronger when guidance frequency is low than when it is high. Panel A of Figure 3 graphically illustrates this prediction while panel B presents the results. As Figure 3 shows, the results are qualitatively consistent with our prediction. Formal tests of H1 are reported in Table 2, which presents the descriptive statistics, results of a contrast-coded analysis of variance (ANOVA), and a follow-up test of simple main effects.

Insert Figure 3 and Table 2 about here

A conventional ANOVA is not designed to detect ordinal interactions such as the one predicted in our H1 (Rosenthal et al. 2000, Tan et al. 2010). The appropriate test of the ordinal interaction as hypothesized in H1 is a contrast-coded ANOVA, which allows us to test the specific interaction pattern by assigning appropriate contrast weights (Buckless & Ravenscroft 1990). Consistent with H1, we assign a contrast weight of -1 in the high frequency/inconsistent condition, -3 in the low frequency/inconsistent condition, and +2 in both of the two consistent conditions. These contrast weights reflect our hypothesis that the difference between consistent and inconsistent guidance will be greater (smaller) when guidance frequency is low (high).20

Panel B of Table 2 presents the results of this planned contrast and shows a significant ordinal interaction ($F = 3.33, p = 0.035$), consistent with the prediction that the impact of guidance consistency on investors’ confidence is contingent on low guidance frequency. Importantly, the residual (between-cells) variation not captured by this contrast is insignificant ($p$...

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20 We check that our results are robust to alternative contrast weights. For instance, we assign contrast weights of +3 to the high frequency/consistent condition; +2 to the low frequency/consistent condition; -1 to the high frequency/inconsistent condition; and -4 to the low frequency/inconsistent condition; the overall contrast is still significant for H1 and H2. We also assign contrast weight of -3 to the low frequency/inconsistent condition and +1 for all other three conditions to check whether lack of consistency is particularly salient only when frequency is low. These alternative contrast weights are also significant for both H1 and H2 (all $p$-values < 0.05).
= 0.826), indicating that the hypothesized contrast explains a considerable portion of the variation in investors’ confidence. We also report a follow-up test of simple main effects in Panel C of Table 2, which confirms our prediction in H1 that guidance consistency has a significant impact on investors’ confidence in their EPS estimates when guidance frequency is low (t = 3.42, p = 0.033) but not when guidance frequency is high (t = 0.16, p = 0.343).

H2 predicts that guidance consistency will positively impact investors’ likelihood of investing in Alpha and this impact will be stronger when guidance frequency is low than when it is high. This prediction is again graphically illustrated in Panel A of Figure 3 and the result is presented in Panel C. Formal tests of H2 are reported in Table 3, which presents the descriptive statistics, results of a contrast-coded ANOVA, and a follow-up test of simple main effects.

Using the same contrast weights as in H1, the planned contrast reported in Panel B of Table 3 is statistically significant (F = 5.21, p = 0.012), consistent with the ordinal interaction prediction in H2. The residual (between-cells) variation not captured by this contrast is insignificant (p = 0.334), indicating that the hypothesized contrast explains most of the variation in investors’ likelihood of investing in Alpha. Again, our follow-up test of simple main effects suggests that guidance consistency impacts investors’ likelihood of investing in Alpha when guidance frequency is low (t = 3.39, p = 0.034) but not when guidance frequency is high (t = 0.35, p = 0.277).

Overall, our results suggest that when guidance frequency is low, whether or not Alpha’s managers consistently issue guidance significantly influences: (a) investors’ confidence in their EPS estimates and (b) their willingness to invest in Alpha. By contrast, when guidance frequency
is high, neither judgment is influenced by guidance consistency, which is consistent with our prediction that guidance consistency (or lack thereof) is perceived to be a more deliberate choice when guidance frequency is low than when guidance frequency is high.

**Causal Path Model**

We test our causal path model outlined earlier to better understand the underlying process driving investor judgments. Link 1 of our model predicts that investors, in general, are more likely to attribute inconsistent guidance to managerial opportunism when guidance frequency is low than when frequency is high. Panel A of Table 4 presents descriptive statistics. We test the guidance consistency × guidance frequency contrast implied in Link 1 using the same contrast weights as in H1 and H2. The contrast-coded ANOVA reported in Panel B is statistically significant (F = 3.67, p = 0.029), supporting our prediction that less consistent guiders are perceived as more opportunistic particularly when guidance frequency is high. Follow-up tests of simple main effects reported in Panel C show that guidance consistency impacts investors’ perceptions of managerial opportunism when guidance frequency is low (t = 5.76, p = 0.009) but not when frequency is high (t = 0.87, p = 0.177).

Consistent with our prediction for Link 2, we find that investors’ perceptions of opportunism are negatively correlated with their confidence in their EPS estimates (r = -0.01, p = 0.032). We also find strong support for Link 3. That is, investors’ confidence in their EPS estimates is positively correlated with their likelihood of investing in Alpha (r = 0.33, p = 0.000).
Overall, our causal path model provides supporting evidence for the underlying process that is driving our results for H1 and H2.21

Test of H3

H3 predicts a negative relation between the extent to which investors update their EPS forecasts in response to a firm’s positive guidance and their expectation that they will receive the guidance (hereafter, the “expectedness” of guidance). Recall that the content of the guidance released in Stage 2 of our experiment contains positive news, and it is identical across conditions. This allows us to examine how past patterns of guidance provision impact investors’ reaction to the content of current guidance. To evaluate H3, we construct a new variable—EPSDIFF—which is the difference between investors’ initial and revised EPS estimates. We regress EPSDIFF on participants’ expectation that they will receive guidance for the current quarter (values range from 0 to 100 with higher values indicating higher assessed likelihood that guidance will be provided). Consistent with H3, untabulated results show that the simple regression coefficient on investors’ expectations is negative and significant (β = -0.022, p = 0.03). That is, the “expectedness” of guidance dampens investors’ reaction to the news conveyed by guidance.22

The Mediating Role of Expectedness

In this section, we link H3 to our primary hypotheses by testing whether the expectedness of guidance also affects our primary dependent variables—investors’ confidence in their EPS estimates and their likelihood of investing. We predict that investors are more likely to expect

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21 Investors’ perceptions of managerial opportunism are not directly related to their likelihood of investing in Alpha (r = -0.063, p = 0.496), possibly because many other factors also affect their likelihood of investing in Alpha.
22 Note that the current guidance in our setting conveys “good news”. Prior research documents certain differences in the way that investors react to bad versus good news conveyed by guidance (e.g., Hutton et al. 2003, Rogers and Stocken 2005). Therefore, our results may not extend to “bad news” guidance. We leave this question to future research.
current guidance from a firm that has previously issued guidance consistently or frequently (or both). Conversely, investors are less likely to expect current guidance if a firm has previously issued guidance inconsistently or infrequently (or both). Following these predictions, we investigate whether the expectedness of guidance mediates the relation between our independent variables and dependent variables.

We conduct a mediation analysis following the two-step procedure used by Wang and Tan (2013). The two steps respectively examine (1) whether the independent variables are related to the mediator, and (2) whether the mediator is related to the dependent variable, while controlling for the independent variables. Table 5 provides the results of this analysis.

In step 1, we run an ANOVA with guidance frequency and guidance consistency as our independent variables and the expectedness of guidance as our dependent variable. We find a significant main effect for guidance frequency, guidance consistency, and the consistency × frequency interaction (all p values < 0.00). In step 2, we run an ANCOVA with guidance frequency and guidance consistency as independent variables, the expectedness of guidance as a covariate, and investors’ confidence in their EPS judgments and their likelihood of investing as dependent variables in two separate models. After controlling for the mediator—expectedness—the effect of guidance frequency and consistency as well as the frequency × consistency interaction become insignificant for both dependent variables while the mediator remains significant (p = 0.008 for investors’ confidence judgments and p = 0.051 for likelihood of investing), suggesting that the expectedness of guidance fully mediates the joint effects of
guidance frequency and guidance consistency on investors’ confidence and their likelihood of investment judgments.

**Additional Discussion**

The main objective of our study is to understand the joint impact of guidance consistency and guidance frequency on investor judgments. We find broad support for the idea that guidance consistency influences investor judgments, particularly when guidance frequency is low. While prior research focuses on the sole impact of guidance frequency on investor judgments (e.g., Rogers et al. 2009, Hutton and Stocken 2009), we find only modest evidence in support of a main effect of guidance frequency on investors’ willingness to invest \( (p = 0.06) \), on investors’ perceptions of managerial opportunism \( (p = 0.10) \), and no main effect of guidance frequency on investors’ confidence \( (p = 0.73) \).\(^{23}\) However, guidance frequency is positively correlated with expectedness of guidance, which, in turn is positively correlated, both with investor confidence and their likelihood of investing in the firm \( \text{all } p < 0.001, \text{ untabulated} \).

The weak main effects of guidance frequency could be, in part, due to our experimental design. Because of our focus on guidance frequency and guidance consistency, we hold guidance error and guidance bias constant across conditions, to ensure that our results are mainly driven by our variables of interest. As a result of this design choice, however, our guidance is highly accurate and unbiased on average, which likely dampens the impact of both guidance frequency and guidance consistency.\(^{24}\) Yet, it is striking that we still see a significant effect of guidance consistency conditional on low guidance frequency. A key implication of our results is that

\(^{23}\) These results come from a MANOVA with guidance frequency and guidance consistency as independent variables and the three reported variables as dependent variables. All reported \( p \) values are based on two-tailed tests.

\(^{24}\) Because both past guidance accuracy and past guidance frequency can positively influence investors’ reaction to subsequent guidance (Hutton and Stocken 2009), to the extent that guidance is highly accurate in our setting, our participants are likely to overweight the impact of guidance accuracy and hence the impact of guidance frequency (and possibly also guidance consistency) is dampened.
empirical models relying solely on guidance frequency to explain investors’ reactions to firms with different guidance histories are likely incomplete in capturing the variations in investors’ judgments about these firms.

V. Conclusion

Prior empirical literature on guidance largely focuses on investors’ reaction to guidance content, but disclosure theory suggests that the provision of voluntary disclosures can also be informative. In this paper, we experimentally examine whether and how investor judgments are influenced by a firm’s historical pattern of guidance provision, holding constant key elements of guidance content. We focus on guidance frequency and guidance consistency, which capture the level and the variability of guidance provision respectively. Our main finding is that, investors’ confidence in forecasting a firm’s future profitability and their likelihood of investing in the firm is higher when the firm’s past guidance is consistent than when it is inconsistent. This difference is more pronounced when the firm’s past guidance is infrequent than when it is frequent. Thus, a firm’s past guidance frequency and past guidance consistency affect investors’ judgments in an interactive fashion. Our causal path model suggests that investors associate inconsistent guidance patterns with managerial opportunism, especially when guidance frequency is low.

In addition, we find that a firm’s past guidance pattern also influences investors’ expectation of the current guidance. Frequent and/or consistent past guidance increases the expectedness of the firm’s provision of the current guidance, which in turn reduces the extent to which investors revise their earnings expectation, even though we set the current guidance content to be positive and constant across conditions. In other words, the expectedness of guidance dampens, rather than amplifies, investors’ reaction to the content of current guidance. Together our results suggest that a firm’s historical guidance pattern affects investors’ judgments
in two ways: (i) when they evaluate the firm as a potential investment before they receive current guidance, and (ii) when they update their earnings expectations for the firm after receiving current guidance.

Our findings signify that, as a form of voluntary disclosure, the provision of guidance *per se* can have significant impact on investors’ judgments, even when the content of guidance is held constant. Moreover, in addition to the commonly studied guidance frequency, we show that guidance consistency also conveys important and unique information to investors. Our findings deepen our understanding of the voluntary disclosure of management guidance, and also have implications for managers by highlighting the costs of infrequent or inconsistent guidance. Our result that individual investors’ confidence is positively related to guidance consistency echoes survey evidence which indicates that sell-side analysts feel less confident in their earnings forecasts if a firm provides inconsistent guidance (MWW Group 2009).

Our study suggests a number of interesting directions for future research. First, because our study focuses on the historical pattern of guidance provision, we deliberately hold guidance content constant in our experiment. Given prior findings that the historical pattern of guidance content can also affect investors’ judgments (e.g., Tan et al. 2010, Hilary et al. 2014), it would be interesting to examine whether and how patterns of guidance provision and guidance content jointly influence investors’ judgments. Second, although we find that investors’ reaction to positive guidance is dampened by the expectedness of guidance, whether this effect applies to negative guidance remains an open question. Finally, numerous dimensions of guidance

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25 A comment from one of the sell-side analysts who responded to the survey is particularly apropos: “Disclosing less when times are tough in general is a negative signal that makes it harder to have confidence in your own estimates for a company.” (emphasis ours)
provision other than frequency and consistency await further exploration—for example, the timing of guidance provided and the venue where the guidance is provided.
References


FIGURE 1: Guidance Consistency and Guidance Frequency Manipulations

PANEL A: Consistent Guidance: High Frequency

<table>
<thead>
<tr>
<th>Year</th>
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<th>Q3</th>
<th>Q4</th>
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PANEL B: Inconsistent Guidance: High Frequency

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<th>Q3</th>
<th>Q4</th>
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PANEL C: Consistent Guidance: Low Frequency

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<th>Q3</th>
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<td>Actual EPS</td>
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PANEL C: Inconsistent Guidance: Low Frequency

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<th>Q2</th>
<th>Q3</th>
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<th>FULL YEAR</th>
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</table>

This figure illustrates our manipulation of guidance frequency and guidance consistency. We manipulate guidance frequency at two levels (low versus high) and guidance consistency at two levels (consistent versus inconsistent).

The high-frequency firm provides guidance in nine out of 12 quarters whereas the low-frequency firm provides guidance in three out of 12 quarters. Shaded areas indicate quarters for which no guidance was provided. The consistent firm always provides guidance in the same quarters in all three years. The inconsistent firm provides guidance with no discernible pattern.

Our manipulation of guidance consistency × guidance frequency results in four experimental conditions. Each participant in our experiment is assigned to one of the four conditions illustrated in Panels A through D. The actual EPS is identical across conditions.

PANEL A: PREDICTED MODEL

Guidance Consistency × Frequency \( \rightarrow \) Link 1 (\( \times \)) \( \rightarrow \) Perceptions of Opportunism \( \rightarrow \) Link 2 (\( - \)) \( \rightarrow \) Confidence \( \rightarrow \) Link 3 (\( + \)) \( \rightarrow \) Likelihood of Investment

PANEL B: EXPERIMENTAL RESULTS

Guidance Consistency × Frequency \( \rightarrow \) Link 1 (\( F = 3.67, \ p = .029 \)) \( \rightarrow \) Perceptions of Opportunism \( \rightarrow \) Link 2 (\( r = -.01, \ p = .032 \)) \( \rightarrow \) Confidence \( \rightarrow \) Link 3 (\( r = .33, \ p = .000 \)) \( \rightarrow \) Likelihood of Investment

Panel A of this figure illustrates our causal model representing how we expect guidance consistency and guidance frequency to jointly influence our variables of interest. Details of how we measure investors’ perceptions of opportunism, investors’ confidence in their earnings estimates, and the likelihood that they will invest in a firm are presented in Tables 2, 3, and 4 respectively. Link 1 (\( \times \)) represents our interactive prediction that investors will view inconsistent (consistent) guiders as more (less) opportunistic, but only when guidance frequency is low. Link 2 (\( - \)) represents our expectation that investors’ perceptions of opportunism will be negatively correlated with their confidence in their earnings estimates. Link 3 (+) represents our expectation that investors’ confidence will be positively correlated with their likelihood of investment.

Panel B presents the empirical results for our model. Consistent with our predictions, Link 1 is supported. That is, investors perceive inconsistent guiders as more opportunistic compared with consistent guiders, but only when guidance frequency is low (Table 5 presents formal tests of this guidance consistency × frequency interaction). Link 2 is also supported. Investors’ perceptions of opportunism are negatively correlated with their confidence in their earnings estimates. Finally, investors’ likelihood of investment is positively correlated with their confidence in their earnings estimates, consistent with our expectation for Link 3.
FIGURE 3: Predicted versus Actual Effects of Guidance Consistency × Guidance Frequency Interaction

This figure presents a graphical summary of predicted versus actual effects of Guidance Consistency × Guidance Frequency interaction on participants’ judgments. **Panel A** summarizes the predictions in H1 and H2: Guidance Consistency will positively impact investor confidence (and willingness to invest) and this impact will be stronger when guidance frequency is low than when it is high. Participants are assigned to one of four conditions obtained by crossing two levels of guidance consistency (consistent versus inconsistent) with two levels of guidance frequency (high versus low).

**Panel B** presents actual effects of Guidance Consistency × Guidance Frequency interaction on participants’ confidence judgments in the role of potential investors on a scale of 0 to 10 where “0” represents “Not at All Confident” and “10” represents “Highly Confident” in their estimates of Alpha’s future earnings (H1).

**Panel C** presents actual effects of Guidance Consistency × Guidance Frequency interaction on the likelihood that participants will invest in Alpha over its peers on a scale from 0 to 100, where 0 (100) indicates least (most) likely to invest in Alpha over its peers (H2).
TABLE 1: Guidance Consistency versus Guidance Frequency

<table>
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<tr>
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<th>Frequent Guiders</th>
<th>Infrequent Guiders</th>
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</thead>
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<tr>
<td>Consistent Guiders</td>
<td>1,105</td>
<td>1,217</td>
</tr>
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<td>Inconsistent Guiders</td>
<td>1,322</td>
<td>2,404</td>
</tr>
<tr>
<td>Total</td>
<td>2,427</td>
<td>3,621</td>
</tr>
</tbody>
</table>

The table is adapted from Tang (2014) and presents the relation between guidance consistency and guidance frequency for two consecutive years for a sample of 6,048 firm-year observations from 2002 to 2007.

**Guidance Frequency:** Firms that provide guidance for three or four quarters in year $t$ are considered *frequent guiders*. Firms that provide guidance in for one or two quarters in year $t$ are considered *infrequent guiders*.

**Guidance Consistency:** Firms that provide guidance for the same quarters in year $t$ and in year $t+1$ are considered *consistent guiders*. Firms that provide guidance in different quarters in year $t$ and year $t+1$ are considered *inconsistent guiders*. 
Experimental participants in the role of investors indicate how confident they are in their own EPS estimates for a hypothetical company—Alpha. We manipulate two factors—Alpha’s guidance consistency and guidance frequency. Guidance consistency is varied at two levels (consistent versus inconsistent) and guidance frequency is varied at two levels (high versus low) resulting in four conditions.

**Panel A** presents descriptive statistics for participants’ confidence judgments across the four conditions. Scale endpoints are 0 (“Not at All Confident”) and 10 (“Highly Confident”).

**Panel B** presents the results of a contrast-coded ANOVA. The contrast tests the hypothesis that guidance consistency will positively impact investors’ confidence and this impact will be stronger when guidance frequency is low than when it is high.

**Panel C** presents the simple main effects for the hypothesis by separately testing the impact of consistency at low and high levels of guidance frequency. Consistent with the directional nature of the predictions, all p-values are one-tailed with the exception of the p-value for the residual.
TABLE 3: Likelihood of Investment Judgments: Descriptive Statistics and Analysis of Variance

Panel A: Mean (Standard Deviation)

<table>
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<tr>
<th>Guidance Consistency</th>
<th>Low</th>
<th>High</th>
<th>Row Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inconsistent</td>
<td>62.47 (20.87)</td>
<td>71.40 (15.51)</td>
<td>66.93 (18.78)</td>
</tr>
<tr>
<td>Consistent</td>
<td>70.77 (12.84)</td>
<td>74.07 (19.47)</td>
<td>72.42 (16.44)</td>
</tr>
<tr>
<td>Column Means</td>
<td>66.62 (17.68)</td>
<td>72.73 (17.51)</td>
<td></td>
</tr>
</tbody>
</table>

Panel B: Likelihood of Investment Judgments: Contrast-coded Analysis of Variance

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>d.f.</th>
<th>Mean Squares</th>
<th>F-Statistic</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guidance Frequency × Guidance Consistency</td>
<td>1587.92</td>
<td>1</td>
<td>1587.92</td>
<td>5.21</td>
<td>0.012</td>
</tr>
<tr>
<td>Residual</td>
<td>674.51</td>
<td>2</td>
<td>337.26</td>
<td>1.106</td>
<td>0.334</td>
</tr>
<tr>
<td>Error</td>
<td>35383.90</td>
<td>116</td>
<td>305.03</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Panel C: Likelihood of Investment Judgments: Simple Main Effects of Consistency

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>d.f.</th>
<th>Mean Squares</th>
<th>t-Statistic</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect of consistent vs. inconsistent guidance at low frequency</td>
<td>1033.35</td>
<td>1</td>
<td>1033.35</td>
<td>3.39</td>
<td>0.034</td>
</tr>
<tr>
<td>Effect of consistent vs. inconsistent guidance at high frequency</td>
<td>106.67</td>
<td>1</td>
<td>106.67</td>
<td>0.35</td>
<td>0.277</td>
</tr>
</tbody>
</table>

Experimental participants in the role of investors indicate how confident they are in their own EPS estimates for a hypothetical company—Alpha. We manipulate two factors—Alpha’s guidance consistency and guidance frequency. Guidance consistency is varied at two levels (consistent versus inconsistent) and guidance frequency is varied at two levels (high versus low) resulting in four conditions.

Panel A presents descriptive statistics for participants’ likelihood of investment across the four conditions. Scale endpoints are 0 (“More likely to invest in its peers”) and 100 (“More likely to invest in Alpha”) with a midpoint of 50 denoting “Equally likely to invest in Alpha or its peers.”

Panel B presents the results of a contrast-coded ANOVA. The contrast tests the hypothesis that guidance consistency will positively impact investors’ willingness to invest in a firm and this impact will be stronger when guidance frequency is low than when frequency is high.

Panel C presents the simple main effects for the hypothesis by separately testing the impact of consistency at low and high levels of guidance frequency. Consistent with the directional nature of the predictions, all p-values are one-tailed with the exception of the p-value for the residual.
### Table 4: Investors' Opportunism Judgments: Descriptive Statistics and Analysis of Variance

#### Panel A: Mean (Standard Deviation) Opportunism Judgments

<table>
<thead>
<tr>
<th>Guidance Consistency</th>
<th>Low</th>
<th>High</th>
<th>Row Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inconsistent</td>
<td>43.00</td>
<td>26.80</td>
<td>34.90</td>
</tr>
<tr>
<td></td>
<td>(25.98)</td>
<td>(18.71)</td>
<td>(23.89)</td>
</tr>
<tr>
<td>Consistent</td>
<td>29.17</td>
<td>32.17</td>
<td>30.67</td>
</tr>
<tr>
<td></td>
<td>(20.26)</td>
<td>(23.59)</td>
<td>(21.85)</td>
</tr>
<tr>
<td>Column Means</td>
<td>36.08</td>
<td>29.48</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(24.13)</td>
<td>(21.28)</td>
<td></td>
</tr>
</tbody>
</table>

#### Panel B: Opportunism Judgments: Contrast-coded Analysis of Variance

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>d.f.</th>
<th>Mean Squares</th>
<th>F-Statistic</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guidance Frequency × Guidance Consistency</td>
<td>1829.70</td>
<td>1</td>
<td>1829.70</td>
<td>3.674</td>
<td>.0290</td>
</tr>
<tr>
<td>Residual</td>
<td>2779.53</td>
<td>2</td>
<td>1389.77</td>
<td>2.790</td>
<td>.0655</td>
</tr>
<tr>
<td>Error</td>
<td>57765.13</td>
<td>116</td>
<td>497.98</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Panel C: Opportunism Judgments: Simple Main Effects of Consistency

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>d.f.</th>
<th>Mean Squares</th>
<th>t-Statistic</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect of consistent vs. inconsistent guidance at low frequency</td>
<td>2870.42</td>
<td>1</td>
<td>2870.42</td>
<td>5.764</td>
<td>.009</td>
</tr>
<tr>
<td>Effect of consistent vs. inconsistent guidance at high frequency</td>
<td>432.02</td>
<td>1</td>
<td>432.02</td>
<td>0.868</td>
<td>.177</td>
</tr>
</tbody>
</table>

Experimental participants in the role of investors provide their assessment of reasons why Alpha did not provide guidance in certain quarters. Participants allocate a total of 100 points over three possible explanations for Alpha’s guidance omissions in the past 12 quarters. The three explanations are: (1) Alpha’s managers did not have enough information to provide guidance in those quarters; (2) Alpha’s managers intentionally withheld guidance despite possessing enough information to provide guidance; (3) Alpha’s managers were following Alpha’s established practice of skipping guidance in those quarters. 

**Panel A** presents the percentage allocated by participants’ across conditions to explanation (2). The points assigned to explanation (2) are treated as a measure of participants’ perceptions of managerial opportunism. 

**Panel B** presents a contrast-coded test of the hypothesis that investors are less (more) likely to attribute opportunistic motivations for lack of guidance consistency when guidance frequency is high (low).

**Panel C** presents the simple main effects for the hypothesis by separately testing the impact of consistency at low and high levels of guidance frequency. Consistent with the directional nature of the predictions, all p-values are one-tailed with the exception of the p-value for the residual.

42
Participants are asked to indicate the likelihood that they will receive earnings guidance for the upcoming quarter from Alpha. Participants respond on a scale from 0 to 100 (with 100 (0) indicating that Alpha will definitely (definitely not) provide earnings guidance). This likelihood, which we term “expectedness” is used as a mediator in our analysis. Step 1 is an ANOVA with guidance frequency and guidance consistency as independent variables and expectedness as the dependent variable. Step 2 is an ANCOVA with “expectedness” as the covariate, guidance frequency and consistency as independent variables, investors’ confidence judgments and investors’ likelihood of investing as the dependent variables.

### TABLE 5: Mediation Analysis: “Expectedness of Guidance” as a Mediator

<table>
<thead>
<tr>
<th></th>
<th>Step 1</th>
<th></th>
<th></th>
<th>Step 2</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ANOVA</td>
<td>ANCOVA on Investors’</td>
<td>ANCOVA on Investors’</td>
<td></td>
<td>ANCOVA on Investors’</td>
<td>ANCOVA on Investors’</td>
</tr>
<tr>
<td></td>
<td>on Mediator</td>
<td>Confidence Judgments</td>
<td>Likelihood of Investing</td>
<td></td>
<td>Confidence Judgments</td>
<td>Likelihood of Investing</td>
</tr>
<tr>
<td></td>
<td>F-statistic</td>
<td>p-value</td>
<td>F-statistic</td>
<td>p-value</td>
<td>F-statistic</td>
<td>p-value</td>
</tr>
<tr>
<td>Guidance Frequency</td>
<td>25.81</td>
<td>.00</td>
<td>.693</td>
<td>.407</td>
<td>.834</td>
<td>.363</td>
</tr>
<tr>
<td>Guidance Consistency</td>
<td>54.34</td>
<td>.00</td>
<td>.029</td>
<td>.864</td>
<td>.103</td>
<td>.749</td>
</tr>
<tr>
<td>Frequency × Consistency</td>
<td>21.25</td>
<td>.00</td>
<td>.009</td>
<td>.926</td>
<td>.002</td>
<td>.964</td>
</tr>
<tr>
<td>Mediator (Expectedness)</td>
<td>7.267</td>
<td>.008</td>
<td></td>
<td>3.905</td>
<td>.051</td>
<td></td>
</tr>
</tbody>
</table>

Participants are asked to indicate the likelihood that they will receive earnings guidance for the upcoming quarter from Alpha. Participants respond on a scale from 0 to 100 (with 100 (0) indicating that Alpha will definitely (definitely not) provide earnings guidance). This likelihood, which we term “expectedness” is used as a mediator in our analysis. Step 1 is an ANOVA with guidance frequency and guidance consistency as independent variables and expectedness as the dependent variable. Step 2 is an ANCOVA with “expectedness” as the covariate, guidance frequency and consistency as independent variables, investors’ confidence judgments and investors’ likelihood of investing as the dependent variables.