Using 'Mood Images' in an Annual Report to Influence Shareholder Say-On-Pay Votes

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ABSTRACT

We examine whether mood images—cosmetic and information-free graphical elements—in an annual report influence shareholder votes on the say-on-pay (SOP) proposals. Consistent with the cognitive dissonance theory, we find that on average mood images promote heuristic decision making and increase shareholder voting support for SOP proposal. However, in the presence of signals conflicting managers' proposal, such as a proxy advisor's investigation of the firm, mood images prompt a more critical evaluation of the SOP resolution by shareholders, which negates their positive effect on SOP resolution support. Our findings reveal the contingent nature of the effect mood images have on shareholder voting behavior.

Keywords: mood image; shareholder vote; proxy advisor; cognitive dissonance

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1. INTRODUCTION

The psychology literature has long recognized that humans associate images with feelings and emotions, which in turn influence perceptions, attitudes, and behavior (Cho, Schwarz, and Song 2007). Mood images — cosmetic and information-free graphical elements, such as a picture of a smiling model, a photo of a sunny day or happy children on a product — affect individuals' attention and arousal leading to emotional responses (Decrop 2007).[1] Emotional responses have been linked with variations in mood and cognitive processing, and in turn with decision making. Festinger (1957) proposes that cognitive consistency in signals that individuals receive, e.g., the consistency between a firm's reputation and positive images on its products, promotes feelings of content and positive mood leading to heuristic approaches to processing information and less critical decisions making. Consistently, Clore, Schwarz, and Conway (1994), Bagozzi, Gopinath, and Nyer (1999) and Batra and Stayman (1990) document that people overweight positive outcomes and underweight negative outcomes and are less critical of advertising when they are in a good mood, e.g., prompted by colorful product advertising, and do not face conflicting signals, e.g., negative media coverage of the firm. Cognitive consistency is essential to achieve the desired effect of using mood images to promote decision making consistent with the firm's intent, e.g., promote a purchase of a product with colorful and attractive design.

Individuals experience cognitive dissonance when they face negative or conflicting stimuli that create feelings of unease and tension, and these negative emotions promote a more critical and analytical approach to decision making. Cognitive dissonance motivates individuals to engage in

[1] Images influence consumer attitude (Mitchell 1986), emotional responses to products (Chowdhury, Olsen, and Pracejus 2008), purchase behavior (Underwood and Klein 2002, Madzharov and Block 2010), and shape perceptions of the company and of the brand (Alba and Hutchinson 1987; Zaltman and Coulter 1995, Keller 2001). Marketing (Wansink and Chandon 2006, Chernev 2011; Mishra and Mishra 2011) and corporate brand communication (McQuarrie 2008; Wedel and Pieters 2008) routinely harness the influence of mood images on individuals' behavior.

actions to reduce the negative emotional state that entail (1) changing cognitions, which includes altering initial cognitions, developing new beliefs, attitudes, and behavior, e.g., through information searches and analytical processing of information, and (2) adjusting the importance of the cognitions, which includes reweighing the importance of different pieces of information (Hinojosa, Gadner, Walker, Cogliser and Gullifor 2017). Actions aimed to reduce cognitive dissonance can lessen the effect mood images have on promoting positive mood and heuristic decision making, for example, they can lead to a more critical evaluation of the product, which negates the intended effect advertising has on inducing positive emotions that promote product purchase.[2]

This study builds on the cognitive dissonance theory to examine the effect of mood images through the lens of shareholder voting in the annual general meeting (AGM). We examine the say-on-pay (SOP) vote in which shareholders approve the compensation package of the top management — a routine AGM vote that reflects shareholder support for the managerial team (Ertimur, Ferri and Oesch 2013, Malenko and Shen 2016, Dey, Starkweather and White 2022). We focus on the role of mood images in the annual report for three reasons. First, companies are legally obliged to post annual reports on their corporate website and distribute them to shareholders before an annual meeting. Hard copies of annual reports are also routinely distributed during the annual meeting, thus shareholders have access to the annual reports when deciding on how to exercise their votes at the AGM. Second, the annual report is aimed primarily at shareholders, which reduces the influence of confounding effects, e.g., the use of images to influence other stakeholders such

[2] For example, consumers are more likely to critically evaluate a product and their purchase decision when a company has a negative public reputation, even if the product is accompanied by positive advertising. Consistently, Pruitt and Friedman (1986) and Chavis and Leslie (2009) document a negative effect consumer boycotts have on sales, and Hunter, Menestrel and de Bettignies (2008) document that Danone struggled to reduce French consumer boycott in 2001 of its products (triggered by company layoffs to reduce costs) through increased advertising, social media campaigns, and social measures aimed at workers.

as consumers and regulators. Finally, the annual report is an important corporate marketing tool (Anderson and Imperia, 1992, Bekey, 1990, Neu, Warsame, and Pedwell, 1998) and firms can tailor the content of the report to achieve strategic objectives, such as promote positive corporate image. Ditlevsen (2012, 391) highlight that "visual elements are used strategically in annual reports to construct a corporate identity that is aligned with company strategy in order to position companies as attractive to investors and other stakeholders". Importantly, there is no regulation constraining the use of mood images in an annual report, which stands in contrast to the 10-K filing, whose format and content is regulated by the SEC and the filing is devoid of mood images. This setup boosts our confidence that a firm's use of mood images may have an impact on shareholder voting support for SOP proposals at the AGM.[3] Mood images in an annual report, a document firms are legally required to provide to shareholders before the AGM, include pictures of nature, happy families, and models (see Appendix A for examples).[4]

We conjecture that mood images in an annual report promote positive emotions and heuristic decision-making to garner shareholder support for managerial views and proposals at the AGM. However, this positive association is subject to cognitive dissonance when shareholders receive signals inconsistent with the positive impressions conveyed through the images. As the positive impression of mood images clashes with other signals shareholder receive, the resultant dissonance will evoke a more critical evaluation of managerial compensation proposals, which we predict will result in a less favorable SOP proposal support.

[3] We do not claim that managers use mood images specifically to influence shareholder SOP vote. Rather, mood images create a positive image of the firm which promotes shareholder votes in line with the managerial objective, such as supporting the SOP vote. We focus on SOP because it is a routine vote across firms and time, thus not influenced by specificity of unique votes such as on an M&A proposal.

[4] The annual report is a comprehensive report prepared annually for shareholders that reports on the firm's operations and financial performance over the previous fiscal year and showcases managers' strategy and vision for the future. Typically, the annual report includes (1) a letter from the president or CEO, (2) performance highlights from the preceding year, (3) financial statements and (4) performance and outlook for future years.

It is not obvious that (1) mood images will affect shareholder voting and (2) that the effect of mood images on shareholder voting will vary depending on the presence of conflicting signals. Mood images may have a limited impact on shareholder votes for at least two reasons. First, shareholders tend to be financially sophisticated and often have a finance background or experience that is necessary to invest in capital markets (Sias, Starks, and Titman 2006). Further, investors allocate a non-trivial amount of their wealth to stock investments and their stock selection follows significant research about the company and the managerial team. To the extent that firm-specific knowledge informs their investment decision, shareholders would be less influenced by a firm's strategic use of mood images in an annual report. Second, prior research documents that individuals devote more attention and scrutiny to issues that they are more involved in, such as their stock investment (Park, Levine, Westerman, Orfgen, and Foregger 2007; Worthington, NussBaum, and Parrott 2015; Dhanesh and Nekmat 2019). Thus, it is possible that investors are not subject to a negative emotional state induced by signal inconsistency thus cognitive dissonance may not affect their SOP votes.

To speak about the causal effect that mood images in an annual report have on shareholder SOP votes, we utilize a quasi-natural experiment related to Institutional Shareholder Services' (ISS) investigation, which is our source of cognitive dissonance. ISS is the largest proxy advisor that provides voting recommendations to investors. Shu (2021) highlights that ISS has over 60% market share in the proxy advisory market, has over 1,600 institutional clients, and covers more than 44,000 shareholder meetings. Ertimur et al. (2013), Malenko and Shen (2016), and Dey et al. (2022) highlight a substantial influence of proxy advisors on voting outcomes. When the SOP voting support falls below the 70% threshold, ISS embarks on a qualitative review of the firm's shareholder engagement before the next meeting. ISS requires the firm to showcase an effort to improve shareholder engagement in response to low shareholder voting support. At the next AGM,

ISS evaluates the firm's engagement and can either issue a favorable SOP vote recommendation and cease monitoring of the firm or threaten to issue an unfavorable recommendation for its SOP proposal. ISS investigation, a highly visible external signal that shareholder support for the firm's compensation is low, conflicts with the positive impression promoted by the mood images in the annual report leading to cognitive dissonance.[5] ISS investigation commences after the AGM where the firm fails to reach the 70% threshold and we examine how it will affect shareholder SOP votes at the next AGM subject to firm's use of mood images in the annual report.

The identification that we exploit relies on two facets. First, around the 70% threshold, receiving an ISS treatment is random (Dey et al. 2022). Thus, using firms just below and above the threshold as treatment and control firms, respectively, creates a quasi-random sample of firms with similar characteristics, but differing only with respect to the ISS investigation over the next year.[6] Second, ISS monitors shareholder engagement and responses to shareholder queries, but not the content of an annual report or the firm's use of mood images. Thus, we should not observe a difference in the treatment firms' and control firms' use of mood images in annual reports, a result we confirm. Consequently, any differential effect of mood images on shareholder SOP votes between treatment and control firms comes solely from *investors'* heterogenous responses to mood images in annual reports, triggered by the presence of cognitive dissonance. Third, though shareholders can observe if SOP votes are just below the thresholders, the formal ISS investigation

[5] ISS investigation focuses on shareholder engagement and does not evaluate if managerial compensation is justifiable. Further, ISS investigation does not necessarily lead to an 'against' recommendation at the next AGM and can actually result in increased engagement and transparency that can promote higher SOP support. SOP votes are not binding and there is no SEC penalty for low voting support or low engagement with shareholders. Consequently, firms do not need to respond to ISS investigation nor change the way they communicate with shareholders to pass the compensation vote as around the 70% threshold, firms already have significant support to pass the SOP vote.

[6] Firms with and without dissonance signals at AGM could also be identified based on the signs of earnings news or ISS's recommendations for SOP proposals. However, such signals introduce selection bias as they are correlated with shareholder votes and other firm characteristics (Dey et al. 2022). Our setting avoids the selection bias concern by using firms almost randomly split into treatment firms (subject to ISS investigation, thus subject to cognitive dissonance) and control firms (not subject to ISS investigation, thus with congruent signals).

it triggers sends a strong negative public signal that can affect both institutional and retail shareholders decision making.[7] Institutional investors' fiduciary duties and litigation risk promotes higher scrutiny of votes in companies subject to prominent public signals, such as ISS investigation (Malenko, Malenko and Spatt 2022; Hooghiemstra, Kuang and Qin 2015). ISS investigations also attract both shareholder and investor attention to the firm, which can trigger a more careful evaluation of the firm by investors (Dey et al. 2022).

Our careful selection of treatment and control firms within a close caliper around the 70% threshold, below which the ISS investigation of a firm is triggered, should control for endogeneity in treatment assignment that could correlate with the usage of mood images and shareholder SOP voting. To further ensure we identify the true treatment effect and establish a *causal* effect that mood images have on shareholders' SOP votes, we focus on *changes* in the use of mood images and in SOP voting support between the current AGM, where an ISS investigation is triggered, and the next AGM. Compared to a levels model, a changes regression model factors out time invariant firm characteristics that could correlate with treatment assignment and shareholder votes.[8] This research design reinforces our confidence that we identify a causal relation between mood images and shareholder voting support for SOP proposals, conditional on the presence of cognitive dissonance.

To examine our research questions, we use 408 U.S. firm-year-SOP voting outcome observations between 2011 and 2020. Our sample includes 198 treatment (210 control) observations whose SOP voting outcomes, i.e., the percentages of shareholders' votes for a SOP proposal, range between 67%–70% (70%–73%) in the current annual meeting and that have a non-

[7] Dey et al. (2022) highlight the negative reputational effect of ISS investigation that prompts firms to increase shareholder engagement, transparency of CEO compensation and reduce total CEO pay compared to control firms.
[8] The advantages of a changes model come at the cost of a lower testing power for identifying a statistically significant treatment effect when variables are 'sticky' (Wooldridge 2010).

missing SOP voting outcome in an AGM within the next three years.[9] Using Python, we extract mood images from the firms' annual reports. We collect mood images shown prior to the 10-K filing section in an annual report, as the content in the 10-K filing section strictly follows the SEC's regulations and its format and is subject to the auditor's and SEC's scrutiny.[10]

To validate the assumption that around the 70% voting support cut-off point, firms are almost 'randomly' allocated into treatment and controls firms, we first test for differences in (1) the number of mood images per annual report and (2) firm characteristics prior to an ISS investigation. We find no evidence of significant differences between treatment and control firms. Second, consistent with Dey et al. (2022), we find that the distribution of voting outcomes for all firms in ISS Voting Analytics with SOP voting support between 50% and 90% is smooth around the 70% deterministic threshold, suggesting a random assignment to treatment and control firms. Jointly, these tests support our identification strategy that the allocation to treatment and control firms is locally 'random'. In addition, we find that changes in the number of mood images between the current and the next annual meeting are not significantly different between treatment firms and control firms. This test supports our conjecture that we capture differences in *shareholders' perception* of mood images, conditional on the ISS investigation of a firm, not heterogenous changes in *firms' usage* of mood images between consecutive AGMs.[11] This evidence implies that treatment firms do not alter their usage of mood images between annual meetings.

In our main tests, we find a positive relation between changes in the number of mood images and changes in the SOP voting support for firms not subject to ISS investigation, which confirms

[9] The majority of SOP votes are annual, but we allow up to three years between votes. Our conclusions are unchanged when we consider only SOP votes separated by one year.

[10] We draw a random sample of 100 annual reports and manually read their 10-K filing sections. We find that, of the 100 annual reports none includes a mood image in the 10-K filing section.

[11] In untabulated tests, we find no significant difference between treatment and control firms in terms of changes in the positioning of mood images within the annual report, i.e., the order of pages on which a mood image is displayed, or the size of mood images between meetings.

that mood images have a positive effect on SOP voting support in the presence of cognitive consistency. This effect is economically significant – a firm not subject to ISS investigation that changes the usage of mood images between consecutive meetings by a one-standard-deviation experiences a 22% increase in the SOP voting support between consecutive AGMs. However, when firms are subject to the ISS investigation, we find that the positive effect of mood images on shareholder voting support is muted. This evidence suggests that shareholders are affected differently by mood images in the presence of incongruent messages. Given that mood images positively affect individuals' perceptions, attitudes, and behaviors (Mitchell 1986, Chowdhury et al. 2008, Underwood and Klein 2002, Madzharov and Block 2010), our results are in line with the cognitive dissonance theory that shareholders adopt a heuristic approach to process information when they are in 'good mood'. However, in the presence of conflicting stimuli, like the ISS investigation in our setting, shareholders adopt a critical and analytical approach resulting in a lower SOP voting support.

Next, we conduct additional tests to exclude alternative explanations. First, firms subject to ISS investigation may change the way they present financial information to shareholders in an annual report by, for example, altering the tone and complexity of the language, which may influence shareholder voting in treatment firms, compared to control firms. We find that controlling for changes in the readability and the tone of annual reports between two consecutive AGMs does not change our inferences. Second, images that contain information — infographics such as bar charts, pie graphs, and Venn diagrams —in an annual report may affect shareholders' voting outcomes as they contain value-relevant financial information (Christensen, Fronk, Lee, and Nelson 2021) and their usage may correlate with mood images. We find that our results remain unchanged when we additionally control for changes in the usage of infographics. Third, we construct variables for changes in other graphical features and format of an annual report, such as

bullet points, font size, font color, and the number of words. Controlling for changes in these graphical and textual features does not change our results.

Cross-sectional analyses show that our findings on the asymmetric impact of mood images on SOP voting conditional on ISS investigation is more pronounced when the negative effect of cognitive dissonance on shareholders is stronger. This includes votes on firms with lower quality information environment, as captured by lower analyst coverage, where investors have to spend more time and resources to acquire and process information to resolve cognitive dissonance, thus they are in a more negative emotional state. Further, the effect is weaker for firms with higher institutional holdings, blockholder ownership and domestic institutional ownership – these investors are more sophisticated and informed compared to retail or foreign investors thus less likely to suffer from cognitive dissonance. The effect is stronger when investors' sentiment is more bearish and when the meeting takes place during winter, i.e., in instances when investors are already in unfavorable mood and more sensitive to negative stimuli. Our result is also stronger when the number of proposals that shareholders need to vote on in a meeting is high. Individuals facing several decisions have fewer resources they can devote to actions helping them to resolve the cognitive dissonance, which can increase their frustration and negative emotional state promoting votes against managerial SOP proposal.

Our study makes several empirical and practitioner contributions. First, we extend the literature about the impact of images on human behavior to the annual report and shareholder voting at the AGM. Although the use of mood images in advertising and branding has received a significant attention (e.g., Peracchio and Meyers-Levy 2005; Amit, Algom, and Trope 2009; Rim, Amit, Fujita, Trope, Halbeisen, and Algom 2015), no research has examined how mood images affect shareholder votes at annual general meetings. Though we focus specifically on SOP votes, which is arguably among the most important and routine shareholder AGM votes, our results

identify patterns likely applying to other shareholder votes subject to cognitive dissonance highlighting generalizability of the findings.

Second, we examine the use of images in annual reports by listed U.S. companies and their impact on shareholder behavior, conditional on the presence of conflicting signals, such as a proxy advisor's investigation. Previous studies on the impact of images on consumers use case studies, interviews, or surveys. We showcase how some of the most pertinent questions in marketing and management research can be answered using a quantitative analysis of big data, as exemplified by the content of U.S. firms' annual reports. The practitioner contribution is that we show how mood images can lead to shareholders' unintended and unfavorable voting behavior in the presence of cognitive dissonance in signals. Our findings can help Investor Relations departments to better understand the importance of using graphical, information-free content in annual reports adequately to induce desirable shareholders' voting support for managerial proposals.

2. LITERATURE REVIEW

This section first discusses the link between mood images and cognitive processing. Second, we discuss the association between proxy advisors' recommendations and shareholder voting. Finally, we discuss the role of images in an annual report and links the mood images with the SOP voting outcomes.

2.1 Images in an Annual Report and Cognitive Processing

Images can influence recipients' emotional state, which in turn affects their cognitive processing. Bodenhausen, Kramer, and Susser (1994) and Schwarz (2011) report that positive mood promotes heuristic decisions making and less attention to processing detailed information as individuals do not feel that even a suboptimal decision will have a significant negative effect on their well-being. In contrast, negative emotions signal threat, which calls for a more systematic and

detailed evaluation of decisions. Consistently with mood affecting cognitive processing, studies document stronger negative customer reactions to negative, compared to positive, advertising messages and corporate social responsibility disclosures (Chang and Lee 2009; Dens, De Pelsmacker, and Janssens 2008; Chung and Lee 2019).

2.2 Proxy Advisors' Recommendations and Shareholder Voting on Say-On-Pay

The Dodd-Frank act (U.S. Securities and Exchange Commission, 2011) introduced the Say-On-Pay voting, which has increased the demand for proxy advisors' (PAs) advice. Based on the analysis of relevant policies, regulations, firms, industries, and discussions with market participants, PAs provide fee-based voting advice on shareholder proposals to their clients. There are two large proxy advisors, Institutional Shareholder Services (ISS) and Glass Lewis (GL), that account for over 90% of the proxy advisor market share. Shu (2021) estimates the market share of ISS and GL are 63% and 28%, respectively, in 2017. Institutional investors are the primary clients of PAs and use ISS recommendations to meet their fiduciary duties to investors as they face capacity constraint to analyze proposals on several companies in their highly diversified portfolios.

Previous literature provides evidence that PAs' recommendations are highly influential on shareholder voting decisions. (e.g., Choi, Fisch, and Kahan, 2009; Ertimur, Ferri, and Oesch, 2013; Larcker, McCall, and Ormazabal, 2015; Malenko and Shen, 2016). Ertimur et al. (2013) examine the association between PAs' recommendations and shareholder votes on SOP and find that negative ISS (GL) recommendations are associated with 24.7% (12.9%) more votes against the compensation plan. When ISS and GL both recommend voting Against, voting dissent increases by 38.3%. Malenko and Shen (2016) use the sample from 2010 to 2011 and a cut-off rule in ISS voting guidelines to conduct a regression discontinuity design. They find that an ISS recommendation *against* an SOP proposal leads to a 25% reduction in say-on-pay voting support, suggesting a strong influence on shareholder votes.

2.3 The Mood Images of Annual Report and Shareholder Voting Outcomes on Say-On-Pay

After the 1929 stock market crash, the U.S. Securities and Exchange Commission (SEC) mandated that listed firms prepare an annual report to be shared with their shareholders, in addition to the regulatory filings. An annual report goes beyond reporting on a firm's financial position, which is recorded in the 10K filing. The annual report aims to communicate to shareholders on the firm's performance, future strategy, and achievements over the completed fiscal year in a clear and understandable way. Firms can provide information on their mission, history, and accomplishments that include news on product launches, R&D projects, and corporate social responsibility initiatives. In addition, although annual reports are primarily aimed at shareholders, they are also an important corporate marketing tool (Anderson and Imperia, 1992, Bekey, 1990, Neu, Warsame, and Pedwell, 1998), and there are no strict regulations and guidelines for the use of mood images. This stands in contrast to the 10-K filing, which is devoid of mood images and whose format and content are highly regulated by the SEC.

Because of a significant managerial discretion in the content and theme of an annual report, it may serve a strategic purpose, such as encouraging shareholders' voting support in line with the managerial guidance. Managers may achieve this objective by promoting a 'good mood' through visual elements in an annual report, which will in turn promote shareholders' voting support in line with managerial recommendations. This leads to our first hypothesis.

Hypothesis 1: Mood images align shareholder votes with managerial guidance, leading to higher SOP voting support.

However, when shareholders face a conflicting signal, such as ISS investigation of a firm, that induces a negative emotional state, shareholders will evaluate managerial proposals at the AGM more critically and analytically to resolve their cognitive dissonance. Thus, we expect that the

positive impact of mood images on shareholders' voting support for SOP proposals will be weakened. This leads to our second hypothesis.

Hypothesis 2: Mood images in firms subject to ISS investigation create cognitive dissonance leading to a negative emotional state and lower SOP voting support.

3. SAMPLE AND RESEARCH DESIGN

3.1 Data Sample

To collect our sample, we first download 30,981 SOP voting outcomes for US companies between 2011 and 2020 calendar years from the ISS Voting Analytics database. We remove 398 duplicate firm-year observations. We require that the percentage of shareholder voting support for a firm's SOP proposal in the current year's meeting falls between 67% and 73%. This reduces SOP voting outcomes to 805, which includes 684 unique firms. We further require that firms have a non-missing SOP voting outcome in the next annual meeting, which immediately follows the current annual meeting and takes place within the next three years. This reduces our sample to 648 voting outcomes for 553 unique firms. Of these, we find 465 firms' annual reports over the period 2011- 2020.[12] Because we calculate variables in changes, our last sample year is 2019. We use Python to extract mood images in each report. We also extract other graphical and textual elements, including font color, font size, the number of words, bullet points, and infographics, such as pie graphs and line graphs.

We merge our sample with Compustat, Center for Research in Security Prices (CRSP), IBES, and Factset 13F Institutional Holdings databases to collect data on control variables for firms' fundamentals, stock returns, number of analysts following, and institutional ownership,

[12] An annual report can be missing if a firm delisted or was acquired and removed the corporate page.

respectively. Considering that the readability and sentiment of an annual report may also affect the impact of mood images on investor behavior, we further merge our sample with the readability and sentiment data of SEC 10-K filings in the SEC Analytics Suite. We retain observations without missing variables, which yields the final sample of 408 firm-year-SOP voting outcome observations between 2011 and 2019. Our sample construction procedure is described in Table 1.

Insert Table 1 about here

3.2 SOP Voting Support

PAs provide shareholders with a fee-based advice on company-specific proposals. The percentage of shareholder voting support decides whether managers' proposals can pass or not. Our dependent variable is the change in shareholder voting support for a say-on-pay (SOP) proposal, *Δ SOP voting support*, measured as *SOP voting support* in the next annual meeting minus *SOP voting support* in the current annual meeting. *SOP voting support* is calculated as the number of shareholder votes *for* a SOP proposal divided by *base*. The *base* is different for different ballot items across companies, for example, the *base* can be the sum of voting *for* and *against*, or the sum of voting *for*, *against*, and *abstentions*, or the number of shares outstanding. We choose the sum of voting *for* and *against* as our calculating *base,* following previous research (Dey et al. 2022). Compared to the level of SOP support, changes in the SOP voting support identify if a stimulus, such as the usage of mood images, *changes* shareholder behavior. A high SOP support could reflect lack of shareholder engagement rather than favorable perception of firm's management thus making causal identification more challenging. Appendix B lists the definitions of variables used in the study.

3.3 Independent Variables

Our main variable of interest is the interaction term between *Δ Mood images* and *ISS investigation*. *Δ Mood images,* a change in mood images, is measured as the difference in the total number of mood images extracted from a firm's annual reports used in the next versus the current annual meeting. We first use Python to extract images embedded in the PDF format of annual reports. Then, we classify the extracted images as *Mood images* using their information on *xref*, a cross reference function used to identify an image in a PDF file.[13] We exclude all images whose sizes are less than one kilobyte as these are typically graphical artifacts, such as a stop point saved as graph.

Figure 1 reports the time-series variation in the mean number of mood images in the annual report. On average, our sample firms include 17 mood images in their annual reports, with the highest number of 23 images in 2012 and the lowest of 12 images in 2018. Figure 2 documents a significant cross-sectional variation in the number of mood images across industries. On average, firms in the construction and construction materials (drugs, soap, perfumes, and tobacco) industries show the highest usage of mood images (the lowest), with the mean number of mood images in an annual report of 52 (5).

Insert Figure 1 and 2 about here

ISS investigation is an indicator variable that equals one if a firm receives a below-70% *SOP voting support* (i.e., 67% to 70%, exclusive) and zero otherwise (i.e., 70% to 73%). Consistent with Dey et al. (2022), in Figure 3, we find that the distribution of voting outcomes for all firms in ISS Voting Analytics with SOP voting support between 50% and 90% is smooth around the 70% deterministic threshold, suggesting a random assignment to treatment and control firms. Figure 4

[13] We use the PyMuPDF function in Python to extract images. More details of PyMuPDF are available online at https://pymupdf.readthedocs.io/_/downloads/en/latest/pdf/.

shows the distribution of voting outcomes for our sample firms with SOP voting support between 67% and 73%. It shows that our sample is uniformly distributed between 67% and 73% and there is no evidence of clustering of observations at either side of the 70% cut-off point.

Insert Figure 3 and 4 about here

3.4 Control Variables and the Regression Model

We follow prior research (Ertimur et al. 2013; Malenko and Shen 2016; Dey et al. 2022) and control for a wide range of determinants that might affect shareholder SOP voting support. Ertimur et al. (2013) suggest that voting dissent is higher in poorly performing firms, captured by low abnormal returns and low ROA, in firms with higher institutional ownership, and in smaller firms. Consistently, we control for firm performance and include measures of firm profitability − *Δ Return on assets* and *Δ Operating loss*, and growth in assets − *Δ Asset growth* and in revenue − *Δ Sales growth*. We also control for relative firm value − *Δ Book-to-market* and *Δ TobinQ*, and firm financial risk − *Δ Leverage*, business risk − *Δ Abnormal returns* and *Δ Stock return volatility*, and firm size - *Δ Ln(market capitalization)*. Firms with higher institutional ownership and analyst coverage may receive more executive pay scrutiny (Malenko and Shen 2016; Dey et al. 2022), thus lower voting support. Consequently, we control for institutional ownership and analyst coverage − *Δ Institutional ownership* and *Δ Ln(analysts)*.

We control for the annual report's characteristics that might affect shareholder SOP voting support, such as the report's readability and tone − *Δ Readability* and *Δ Sentiment*. We construct these measures based on the 10-K filing. We control for the textual and other graphical content of the annual report by looking at average font color, font size, number of words, which captures the complexity of the report, and visual layout of the report as captured by the number of bullet points

and presence of infographics − *Δ Font color*, *Δ Font size*, *Δ Words*, *Δ Bullet points*, and *Δ Infographics*. These annual report characteristics can associate with shareholders' ability to process information in the annual report thus affect SOP voting decision. The annual report characteristics are based on information extracted from the PDF files of annual reports using Python.[14] Ertimur et al. (2013) and Malenko and Shen (2016) show that the ISS recommendation significantly influenced shareholder SOP voting support thus we control for ISS voting recommendation at the annual meeting − *Δ ISS recommendation*. *ISS recommendation* equals one if ISS recommends voting "For" the SOP proposal in an annual meeting and zero otherwise.

We examine the effect of mood images on shareholders' voting support for an SOP proposal using the following regression model that we estimate using OLS:

$$\Delta \text{SOP voting support} = \alpha + \beta_1 \Delta \text{Mood images} + \beta_2 \text{ISS investigation} + \beta_3 \Delta \text{Mood images*ISS investigation} + \chi + \Phi + \mu + \varepsilon. \quad (1)$$

The main variables of interest are *Δ Mood images* and *Δ Mood images*ISS investigation*, each of which captures the net effect of a change in mood images on voting outcome for control group (i.e., β_1) and treatment group (i.e., $\beta_1 + \beta_3$), respectively. χ is a vector of changes in firm-level control variables. We include Fama-French 17 industry fixed effects, Φ, and year fixed effects, μ, to control for unobservable time-invariant industry characteristics and time trends, respectively. We cluster standard errors by industry to allow for a within-industry, intra-group correlation in error terms.

3.5 Descriptive Statistics

Table 2 shows descriptive statistics for the main variables in our sample. We find that the mean of *Δ SOP voting support* is 11.87, suggesting significant variation in percentage of

[14] For infographics, we use the function of *get_drawings()* in Python to identify the parts that possibly contain tables, line graphs and pie graphs in the PDF files of annual reports.

shareholder votes "for" a say-on-pay proposal between the current and the next annual meeting.[15] The average change in the number of mood images between annual meetings is three images, and the means of changes in control variables are on average close to zero.

Insert Table 2 about here

Table 3 compares the variables means between treatment and control firms. As discussed earlier, the likelihood of receiving a shareholder voting support that falls just below (i.e., treatment firms) or just above (i.e., control firms) the 70% of the threshold, which triggers an ISS investigation, is fairly random (e.g., Dey et al. 2022). Consistent with this notion, we find that none of our main variables show a significant difference between treatment and control firms. This gives us confidence that changes in firm characteristics or usage of mood images are unlikely to explain changes in SOP voting support. In Appendix D, we compare the levels of variables in the year where firms are split between treated and control firms. As expected, we find no evidence of significant differences in levels of variables, except *SOP voting support* between treatment firms and control firms, consistent with their random allocation to treated and control groups.[16]

Insert Table 3 about here
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4. EMPIRICAL RESULTS

4.1 Main Results

[15] We report descriptive statistics for the levels of our variables in Appendix C. The mean level of *SOP voting support* in the current year's annual meeting is 70.09, which is comparable to the corresponding figures in prior studies (e.g., Dey et al. 2022). SOP voting support is multiped by 100 thus already expressed in percentages.
[16] By definition, treatment (control) firms are those with a *SOP voting support* that is below (above) 70% in the current year. The mean levels of *SOP voting support* are 68.602 and 71.497 for treatment firms and control firms, respectively.

Table 4 reports the results from estimating our baseline regression model of Equation (1). Consistent with our first hypothesis (H1) that mood images evoke positive feelings subject to cognitive consistency of signals, inducing shareholders' heuristic decision making, we find positive and statistically significant coefficients on *Δ Mood images* across all three columns for firms not subject to ISS investigation, regardless of what types of fixed effects are used. This result suggests that a change in the number of mood images is positively associated with a change in shareholder voting support for SOP proposals when shareholders have consistent signals about a firm. The coefficient on *Δ Mood images*ISS investigation* is negative and statistically significant across all columns, suggesting that mood images do not exert such a positive influence on shareholder voting support if the firm is subject to an ISS investigation.[17] The evidence is supportive of our second hypothesis (H2) that shareholders would make a more critical and analytical evaluation of SOP proposals once they have conflicting signals that arise from mood images and the ISS investigation.

In terms of control variables, we find intuitive results: *Δ Return-on-assets* and *Δ ISS recommendation* are both positively and significantly associated with our dependent variable across all three columns, suggesting a higher percentage of shareholders' votes for a firm's SOP proposal when either the firm's performance or ISS recommendation has improved over time. We find that adjusted R^2s of our regression models hover around 43–45%, suggesting good explanatory power for the model. Overall, the results in Table 4 suggest a contingent impact of mood images on SOP voting support — mood images promote shareholders' voting support, however, in the presence of a conflicting signal, i.e., ISS investigation, the positive impact is muted.

Insert Table 4 about here

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[17] In an untabulated test, we find that the sum of the two coefficients on *Δ Mood images* and *Δ Mood images*ISS investigation* is not significantly different from zero.

4.2 Controlling for the effects of annual reports' other textual and graphical characteristics

We perform several robustness check to ensure reliability of our main findings. First, one could argue that a change in the use of mood images might be a manifestation of changes in other features of an annual report, such tone, textual and graphical elements. To control for these potentially confounding effects, we include in Equation (1) changes in the readability of the annual report (*Δ Readability*), in the optimistic tone of the report (*Δ Sentiment*), in the number of bullet points (*Δ Bullet point*), in the number of font colors (*Δ Font color*), in the number of font sizes (*Δ Font size*), in the number of infographics (*Δ Infographics*), and in the number of words, which captures the length of the annual report (*Δ Words*). To allow for their asymmetric effects on voting support, conditional on the presence of a conflicting signal, we also include their interaction terms with *ISS investigation* in our analyses.

Table 5 reports the results from estimating Equation (1) augmented with variables capturing tone, graphical and textual characteristics of an annual report. We find that the estimated effects of mood images on SOP voting support remain robust, with the magnitudes of coefficients slightly higher compared to Table 4. Thus, our main conclusions are unchanged when we control for other characteristics of an annual report that can correlate with the usage of mood images.

Insert Table 5 about here

4.3 Robustness Tests

This section presents tests that exploit the time-series and cross-sectional variation in the intensity of cognitive dissonance to confirm robustness of our main conclusions.

4.3.1 Access to information

First, we examine whether the effects of mood images vary with the level of accessibility to information that helps resolve cognitive dissonance. The negative emotional state resulting from conflicting signals will be stronger if shareholders must spend more resources to acquire and process new information to resolve the cognitive dissonance. Analysts process complex financial information and disseminate it investors in a comprehensive way including advice on whether investors should hold or sell the stock. Thus, higher analyst coverage reduces the cost of acquiring and processing information making resolution of negative emotional states quicker. In those cases, we would expect a less negative effect on SOP voting support from cognitive dissonance.

Following prior studies (Dey et al. 2022), we first construct *Ln(analysts)*, the log transformation of the number of analysts providing earnings per share forecasts during the four quarters prior to the next fiscal year end. We then create an indicator variable, *High ln(analysts)*, that equals one if *Ln(analysts)* is above the sample median and zero otherwise. Finally, we include *High ln(analysts)* and its two-way and three-way interaction terms with *Δ Mood images* and *ISS investigation*, i.e., *Δ Mood images * High ln(analysts)*, *ISS investigation * High ln(analysts)*, and *Δ Mood images * ISS investigation * High ln(analysts)*, in our baseline regression model of Equation (1). The results are reported in Table 6 Panel A. Consistent with our prediction, we find that the estimated effects of mood images are less pronounced for firms with high levels of analyst coverage.[18]

Insert Table 6 about here

4.3.2 Institutional ownership

[18] For example, according to our result in Column (3), the net effect in the absence of an ISS investigation is 0.029, which is 0.084 (*Δ Mood images*) – 0.055 (*Δ Mood images * High ln(analysts*)). The net effect in the presence of an ISS investigation is 0.003, which is 0.084 (*Δ Mood images*) -0.075 (*Δ Mood images * ISS investigation*) – 0.055 (*Δ Mood images * High ln(analysts)*) + 0.049 (*Δ Mood images * ISS investigation * High ln(analysts*)).

Next, we examine whether the estimated effect of mood images on shareholder voting support varies with a firm' ownership by institutional investors. Institutional investors are more sophisticated, have professional financial background and access to several resources to appraise managerial performance. Thus, they should be less susceptible to cognitive dissonance and if they are, they should be able to resolve the negative emotional state originating from mixed signals more quickly.

Following Bartov, Radhakrishnan, and Krinsky (2000), we use the percentage of a firm's stock held by institutional investors, *Institutional ownership*, as a proxy for the level of investor sophistication. Then, we augment Equation (1) with *Δ Institutional ownership*, a change in institutional ownership between the current and the next annual meeting, and its two-way and three-way interaction terms with *Δ Mood images* and *ISS investigation*. The results are reported in Table 7, Panel A. We find significantly positive coefficients on *Δ Mood images* * *ISS investigation* * *Δ Institutional ownership*, suggesting that the effects of mood images on shareholder voting support are weakened as a firm's institutional ownership increases.

Insert Table 7 about here

In additional tests, we focus on two specific types of institutional ownership. We re-estimate the regression models used in Panel A after replacing *Δ Institutional ownership* with either *Δ Blockholder ownership* or *Δ Domestic institutional ownership*, a change in the value of ownership by institutional blockholders or domestic institutional investors, respectively.[19] The results are reported in Table 7, Panels C and D. Similar to the earlier result, we find that the effects of mood images become significantly smaller as a firm's blockholder ownership or domestic institutional

[19] In untabulated tests, we replace *Δ Blockholder ownership* with *Δ Top5 institutional ownership*, a change in the value of ownership by top 5 institutional investors. We find qualitatively the same results.

ownership increases. As Equation (1) controls for changes in institutional ownership, the evidence for the moderating effect of blockholders and domestic institutional investors does not reflect the overall institutional ownership effect.

4.3.3 Investor sentiment

We also investigate whether the asymmetric effects of mood images vary with investor sentiment. The negative emotional states prompted by cognitive dissonance should be stronger when investors are already in negative mood, which we capture by investor sentiment, resulting in an incrementally negative effect on SOP voting support.[20] Specifically, we measure *Δ Investor sentiment bearish* as the change in the percentage of individual investors who are bearish between the current and the next annual meetings. Then, we re-estimate our baseline regression model of Equation (1) after additionally including *Δ Investor sentiment bearish* and its two-way and three-way interaction terms with *Δ Mood images* and *ISS investigation*. The results are reported in Table 8 Panel A. We find that *Δ Mood images* * *ISS investigation* * *Δ Investor sentiment bearish* shows negative and significant coefficients, suggesting that the negative effect of mood images on shareholder voting support in the presence of an ISS investigation becomes stronger as investors are more bearish.

Insert Table 8 about here

We also examine whether the effects of mood images are conditional on what season of a year a firm's annual meeting takes place in. Winter months associate with the seasonal affective disorder (SAD) — a seasonally recurrent depression typically starting in early winter and ending in spring. SAD associates with depressive symptoms, cognitive impairments, and low mood (Rosenthal et

[20] We utilize the result from a sentiment survey that captures the percentages of individual investors who are bullish, neutral, and bearish. The data is available on https://www.aaii.com/sentimentsurvey/sent_results.

al., 1984; Michalon, Eskes and Mate-Kole, 1997; Harmatz et al., 2000). We expect that the effect of cognitive dissonance on SOP voting support will be more pronounced when an annual meeting takes place during winter than during other seasons.

We define *Season* to equal one if a firm's next annual meeting takes place in winter and zero otherwise. Then, we re-estimate our baseline regression model of Equation (1) that additionally includes *Season* and its two-way and three-way interaction terms with *Δ Mood images* and *ISS investigation*. We report the results in Table 8 Panel B. We find that *Δ Mood images* * *ISS investigation* * *Season* shows negative and significant coefficients across all three, but one, columns, suggesting that the negative effect of mood images on shareholder voting support in the presence of an ISS investigation is stronger during winter.

4.3.4 The number of proposals at the annual meeting

Lastly, we investigate whether the effects of mood images vary with the change in the number of proposals to be voted between two consecutive annual meetings. We expect a more pronounced negative effect of cognitive dissonance if shareholders have to vote on several other proposal than the SOP. In such cases, investor attention and cognitive ability is split between several decisions which likely increases their negative emotional state while reducing the resources that can be devoted to resolving the cognitive dissonance related to the SOP proposal.

We measure *Δ Number of proposals* as the change in the total number of proposals to be voted in the next annual meeting versus the current annual meeting. Then we re-estimate our baseline regression model of Equation (1) after augmenting it with *Δ Number of proposals* and its two-way and three-way interaction terms with *Δ Mood images* and *ISS investigation*. We report the results in Table 9. We find negative and marginally significant coefficients on *Δ Mood images* * *ISS investigation* * *Δ Number of proposals* across two columns, suggesting that mood images have a

negative impact on shareholder voting support when a firm is subject to an ISS investigation and its annual meeting has many other proposals to be voted on.

Insert Table 9 about here

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5. CONCLUSIONS

This study examines whether mood images in a firm's annual report exert influence on shareholders' voting support during the shareholder annual meeting conditionally on the consistency of signals investors face. Utilizing a hand-collected dataset of mood images in U.S. firms' annual reports and the quasi-natural experiment setting related to ISS investigation, we find a contingent nature of mood images in affecting shareholders' voting behaviors. Mood images, on average, positively affect shareholders' voting support for the SOP proposal. However, in the presence of an ISS investigation, a conflicting signal triggering shareholders' critical and analytics approach of processing information, mood images no longer exert such a positive effect. Our findings are not explained by the effects of annual reports' other qualitative, textual, and graphical features, such as the readability, textual tone, and number of bullet points, font colors, font size, infographics, and words. In additional tests, we also show that the estimated effects of mood images are more pronounced in instances when investors will find it harder to resolve cognitive dissonance originating from conflicting signals. Our findings are consistent with the cognitive dissonance theory that individuals use a heuristic approach to make decisions when they are in good mood but rely on a critical and analytical approach when faced with negative or conflicting signals. Future research may consider examining the effect of mood images on other types of stakeholders' behaviors or that of mood images in other types of corporate disclosures, such as environmental, social, and governance (ESG) disclosures.

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APPENDIX A, Examples of mood images in US companies' annual reports

American Express Company, 2010

Macy's 2007

American Airlines Group, 2003

American Airlines Group, 2019

T-mobile, 2019

T-mobile, 2013

APPENDIX B, Variable Definitions

Variable	Definition
SOP voting support	100 * (the percentage of shareholder voting for SOP proposal in the current annual meeting divided by the sum of shareholder voting for and against SOP proposal in an annual meeting).
Δ SOP voting support (change of SOP voting support)	100 * (*SOP voting support* in the next annual meeting that has SOP proposal - *SOP voting support* in the current annual meeting that has SOP proposal).
Mood images	Firm's use of total number of mood images in the PDF version of annual report in an annual meeting that has SOP proposal.
Δ Mood images (change of mood images)	Firm's use of total number of mood images in the PDF version of annual report in the next annual meeting that has SOP proposal minus that in the current annual meeting that has SOP proposal.
ISS investigation	Indicator variable that is equal to 1 if a firm receives below 70% votes approving SOP proposal in an annual meeting. Otherwise, *ISS investigation* equals to 0.
Δ Readability (change of readability)	Flesch Reading Ease Index for SEC 10-K filings in the next annual meeting that has SOP proposal minus that in the current annual meeting that has SOP proposal. The Flesch Reading Ease Index formula, equal to: 206.835 - 1.015(# words / # sentences) - 84.6(# syllables / # words) This formula was developed in by the US Department of Defense in 1948 to differentiate grade-level readability.
Δ Sentiment (change of sentiment)	Loughran-McDonald Negative word proportion for SEC 10-K filings in the next annual meeting that has SOP proposal minus that in the current annual meeting that has SOP proposal. Loughran-McDonald Negative word proportion: The number of Loughran-McDonald Financial-Negative words in the document divided by the total number of words in the document that occur in the master dictionary.
Δ Font color (change of font color)	Firm's use of total number of font colors (NOTE: counting all duplicates on different pages) in the PDF version of annual report in the next annual meeting that has SOP proposal minus that in the current annual meeting that has SOP proposal.
Δ Font size (change of font size)	Firm's use of total number of font size (NOTE: counting all duplicates on different pages) in the PDF version of annual report in the next annual meeting that has SOP proposal minus that in the current annual meeting that has SOP proposal.
Δ Words (change of word)	Firm's use of total number of words in the PDF version of annual report in the next annual meeting that has SOP proposal minus that in the current annual meeting that has SOP proposal.
Δ Bullet point (change of bullet point)	Firm's use of total number of bullet point in the PDF version of annual report in the next annual meeting that has SOP proposal minus that in the current annual meeting that has SOP proposal.
Δ Infographics (change of other images)	Firm's use of total number of infographics in the PDF version of annual report in the next annual meeting that has SOP proposal minus that in the current annual meeting that has SOP proposal.
Return-on-assets	Earnings before interest, taxes, depreciation, and amortization divided by total assets in the fiscal year of an annual meeting that has SOP proposal.
Δ Return-on-assets (change of return on assets)	Earnings before interest, taxes, depreciation, and amortization divided by total assets in the fiscal year of next annual meeting that has SOP proposal minus that in the fiscal year of the current annual meeting that has SOP proposal.
Operating loss	Equals 1 if the firm has a negative earnings before interest, taxes, depreciation, and amortization in Compustat in the fiscal year of an annual meeting that has SOP proposal. Otherwise, equals 0.

Table continued on next page

Variables definitions, continued

Variable	Definition
Δ Operating loss (change of operating loss)	*Operating loss* in the fiscal year of next annual meeting that has SOP proposal minus that in the fiscal year of the current annual meeting that has SOP proposal.
Ln(market capitalization)	Log of market value of the firm in the fiscal year of an annual meeting that has SOP proposal.
Δ Ln(market capitalization) (change of ln(market capitalization))	Log of market value of the firm in the fiscal year of next annual meeting that has SOP proposal minus that in the fiscal year of the current annual meeting that has SOP proposal.
Book-to-market	Book value of the firm divided by it's market value in the fiscal year of an annual meeting that has SOP proposal.
Δ Book-to-market (change of Book-to-market)	Book value of the firm divided by it's market value in the fiscal year of next annual meeting that has SOP proposal minus that in the fiscal year of current annual meeting that has SOP proposal.
TobinQ	Market value of a company divided by its assets' replacement cost in the fiscal year of an annual meeting that has SOP proposal.
Δ TobinQ (change of tobinQ)	Market value of a company divided by its assets' replacement cost in the fiscal year of next annual meeting that has SOP proposal minus that in the fiscal year of current annual meeting that has SOP proposal.
Leverage	Long-term debt plus long-term debt in current liabilities divided by total assets in the fiscal year of an annual meeting that has SOP proposal.
Δ Leverage (change of leverage)	Long-term debt plus long-term debt in current liabilities divided by total assets in the fiscal year of next annual meeting that has SOP proposal minus that in the fiscal year of current annual meeting that has SOP proposal.
Sales growth	Year-over-year growth in total revenue in the fiscal year of an annual meeting that has SOP proposal.
Δ Sales growth (change of sales growth)	Year-over-year growth in total revenue in the fiscal year of next annual meeting that has SOP proposal minus that in the fiscal year of current annual meeting that has SOP proposal.
Asset growth	Year-over-year growth in total asset in the fiscal year of an annual meeting that has SOP proposal.
Δ Asset growth (change of asset growth)	Year-over-year growth in total asset in the fiscal year of next annual meeting that has SOP proposal minus that in the fiscal year of current annual meeting that has SOP proposal.
Abnormal returns	Annual common stock return less the return of the value weighted CRSP index in the fiscal year of an annual meeting that has SOP proposal.
Δ Abnormal returns (change of abnormal returns)	Annual common stock return less the return of the value weighted CRSP index in the fiscal year of next annual meeting that has SOP proposal minus that in the fiscal year of current annual meeting that has SOP proposal.
Stock return volatility	Standard deviation of the monthly stock returns in the fiscal year of an annual meeting that has SOP proposal.
Δ Stock return volatility (change of stock return volatility)	Standard deviation of the monthly stock returns in the fiscal year of next annual meeting that has SOP proposal minus that in the fiscal year of current annual meeting that has SOP proposal.
Ln(analysts)	Log transformation of the number of analysts providing earnings per share forecasts during the four quarters prior to the fiscal year end from IBES in the fiscal year of an annual meeting that has SOP proposal.
Δ Ln(analysts) (change of number of analysts)	Log transformation of the number of analysts providing earnings per share forecasts during the four quarters prior to the fiscal year end from IBES in the fiscal year of next annual meeting that has SOP proposal minus that in the fiscal year of current annual meeting that has SOP proposal.
High ln(analysts)	*High ln(analysts)* equals 1 if the log value of the number of analysts following a firm is larger than the median value of our sample firms in the fiscal year of next annual meeting that has SOP proposal, otherwise, equals 0.
ISS recommendation	*ISS recommendation* equals 1 if ISS recommends voting "For" the SOP proposal in an annual meeting and zero otherwise.

Table continued on next page

Variables definitions, continued

Variable	*Definition*
Δ ISS recommendation (change of ISS recommendation)	*ISS recommendation* in the fiscal year of next annual meeting that has SOP proposal minus that in the fiscal year of current annual meeting that has SOP proposal.
Institutional ownership	Total institutional ownership ratio in percentage of market capitalization as reported on Factset - Stock Ownership in the fiscal year of an annual meeting that has SOP proposal.
Δ Institutional ownership (change of institutional ownership)	The change value of total institutional ownership ratio in percentage of market capitalization as reported on Factset - Stock Ownership in a firms' next annual meeting versus current annual meeting.
Δ Blockholder ownership (change of blockholder ownership)	The change value of ownership by institutional blockholders (>=5%) in percentage of market capitalization as reported on Factset - Stock Ownership in a firms' next annual meeting versus current annual meeting.
Δ Top5 institutional ownership (change of top5 institutional ownership)	The change value of ownership by top 5 institutional investors in percentage of market capitalization as reported on Factset - Stock Ownership in a firms' next annual meeting versus current annual meeting.
Δ Domestic institutional ownership (change of domestic institutional ownership)	The change value of domestic institutional ownership ratio in percentage of market capitalization as reported on Factset - Stock Ownership in a firms' next annual meeting versus current annual meeting.
Δ Investor sentiment bearish (change of investor sentiment bearish)	The change of the percentage of individual investors who are bearish as reported on sentiment survey in the next versus the current annual meetings.
Δ Number of proposals (change of number of proposals)	The change value of the number of proposals of a firms' next annual meeting versus current annual meeting.
Season	*Season* equals 1 if the meeting date of the next annual meeting is in winter, otherwise, equals 0.

The table reports definitions of variables used in the study.

APPENDIX C, Summary statistics for level variables

	Full Sample = 408				
	Mean	Std. Dev.	Q1	Median	Q3
SOP voting support	70.092	1.682	68.717	70.084	71.549
Mood images	17.466	32.406	1.000	6.000	20.000
Return-on-assets	-0.027	0.190	-0.026	0.014	0.049
Operating loss	0.353	0.478	0.000	0.000	1.000
Ln(market capitalization)	7.148	1.927	5.987	7.091	8.295
Book-to-market	0.694	0.645	0.310	0.575	0.919
TobinQ	1.472	1.472	0.712	1.057	1.665
Leverage	0.278	0.244	0.079	0.219	0.431
Sales growth	201.384	1451.910	-12.906	21.876	130.917
Asset growth	607.752	3270.717	-34.567	30.030	342.263
Abnormal returns	-0.063	0.376	-0.303	-0.081	0.135
Stock return volatility	0.108	0.060	0.064	0.092	0.143
Institutional ownership	0.670	0.327	0.479	0.784	0.930
Ln(analysts)	2.199	0.941	1.792	2.303	2.890
ISS recommendation	0.333	0.472	0.000	0.000	1.000

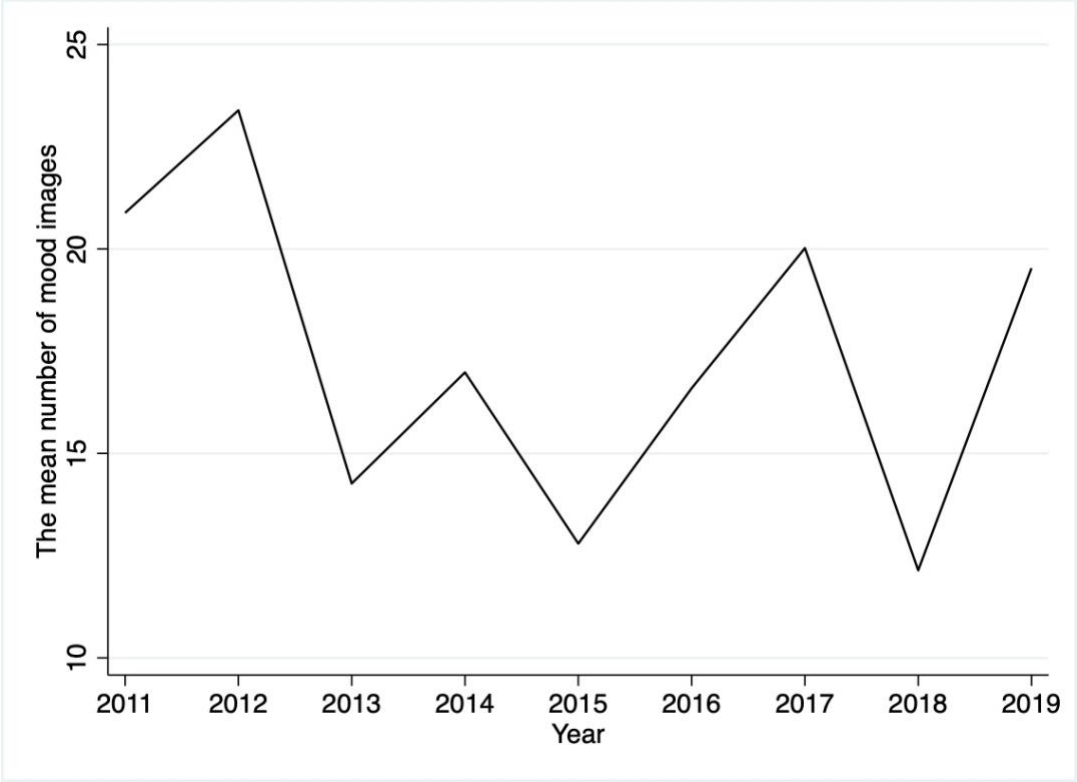
This table shows descriptive statistics for the level variables in the current annual meeting in our sample of 408 firm-year-meeting observations from 2011 to 2020.

APPENDIX D, Comparison of the main level variables between treatment and control samples

	Treated Mean	Control Mean	Difference	t-test	p-value
SOP voting support	68.602	71.497	-2.895	-34.156	0.000
Mood images	15.641	19.186	-3.544	-1.104	0.270
Return-on-assets	-0.037	-0.018	-0.019	-1.028	0.305
Operating loss	0.354	0.352	0.001	0.024	0.981
Ln(market capitalization)	7.141	7.154	-0.013	-0.070	0.944
Book-to-market	0.700	0.689	0.011	0.165	0.869
TobinQ	1.454	1.489	-0.035	-0.237	0.813
Leverage	0.268	0.288	-0.020	-0.845	0.398
Sales growth	204.404	198.536	5.869	0.041	0.968
Asset growth	600.550	614.542	-13.992	-0.043	0.966
Abnormal returns	-0.076	-0.050	-0.026	-0.699	0.485
Stock return volatility	0.107	0.109	-0.002	-0.406	0.685
Institutional ownership	0.682	0.659	0.023	0.705	0.481
Ln(analysts)	2.247	2.154	0.093	0.995	0.320
ISS recommendation	0.328	0.338	-0.010	-0.210	0.834

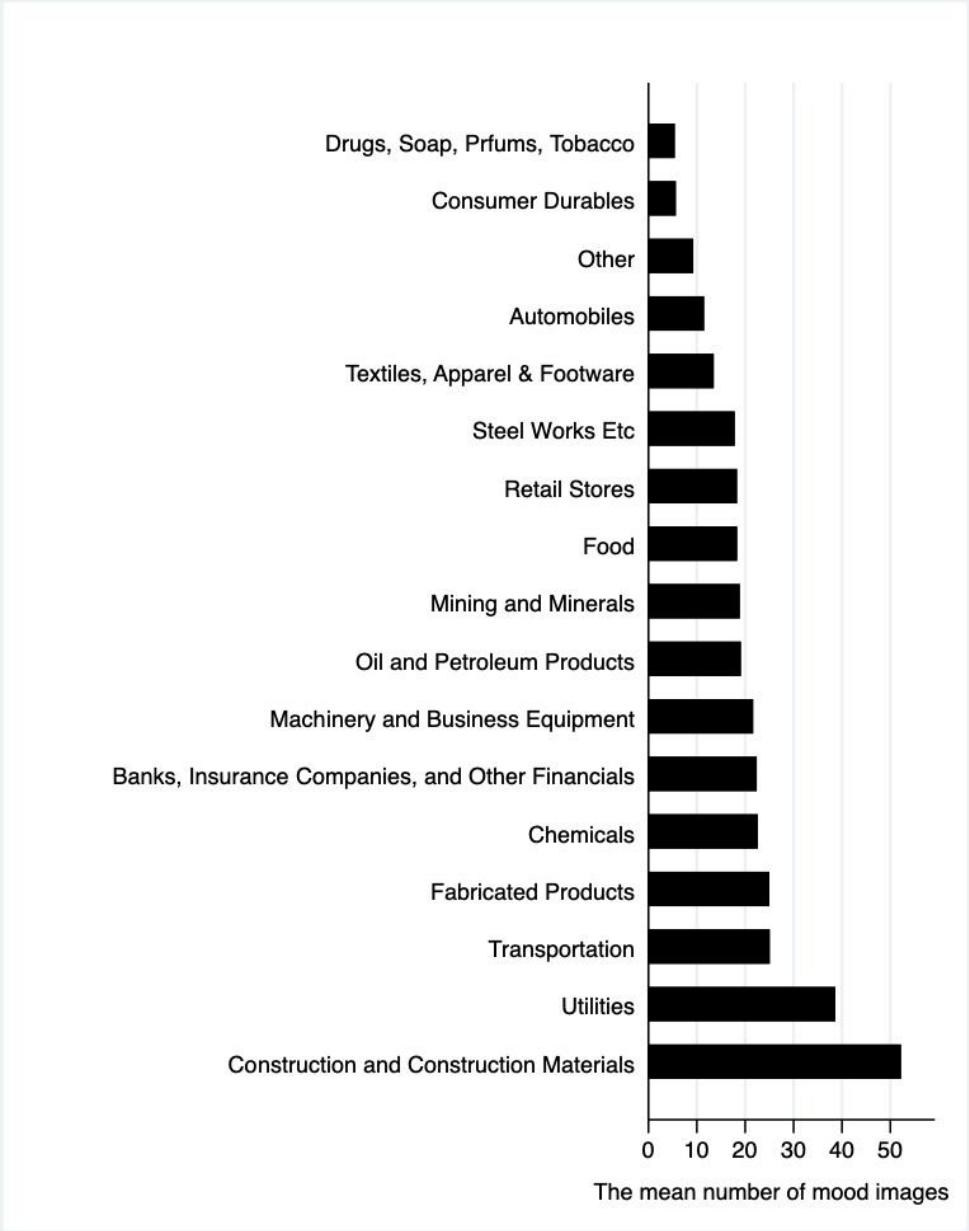
This table compares univariate differences in main level variables between treated group and control group. *Treated* includes firms with 67.00% to 69.99% SOP voting approval in the current annual meeting. *Control* includes firms with 70.00% to 73.00% SOP voting approval in the current annual meeting.

Figure 1, The average number of mood images by year



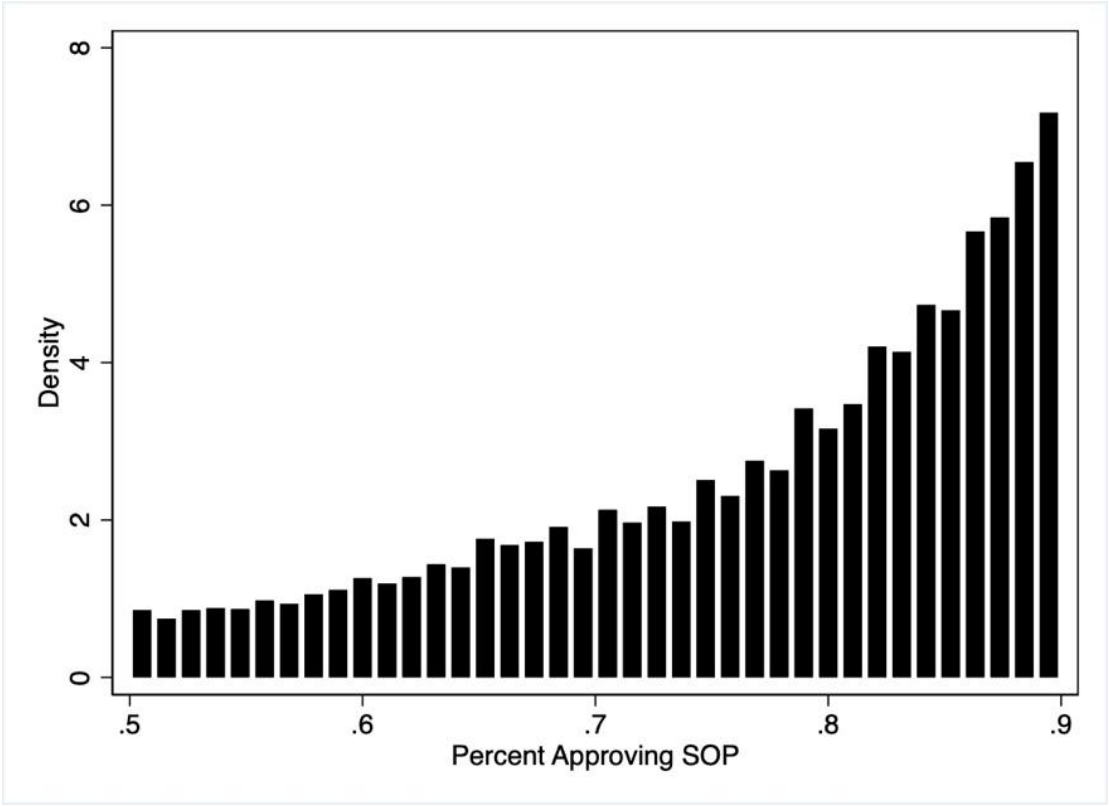
This figure plots a time-series variation in the mean number of mood images in the annual reports in sample firms from 2011 to 2019.

Figure 2, The average number of mood images by industry



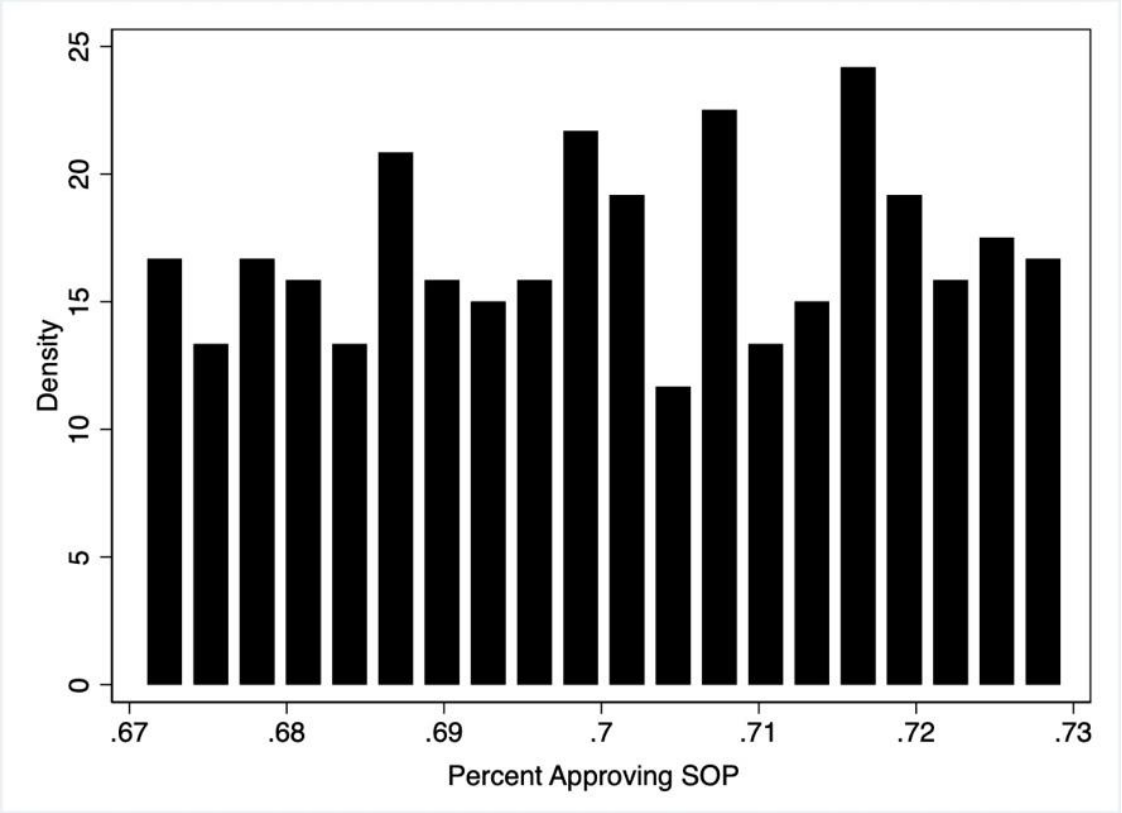
The figure plots a cross-sectional variation in the number of mood images in our sample firms across industries.

Figure 3, The distribution of voting outcomes for all firms in ISS Voting Analytics



This figure plots the distribution of voting outcomes for all firms in ISS Voting Analytics with SOP voting support between 50% and 90%. The y-axis represents the observations for each percentage of SOP voting support between 50% and 90% for all firms. The height of y-axis is scaled so that the sum of all bar areas equals 1.

Figure 4, The distribution of voting outcomes for our sample firms



This figure plots the distribution of voting outcomes for our sample firms with SOP voting support between 67% and 73%. The y-axis represents the observations for each percentage of SOP voting support between 67% and 73% in our sample. The height of y-axis is scaled so that the sum of all bar areas equals 1.

Table 1, The sample construction procedure

	N
ISS - Voting Analytics data	635,218
Retain observations for the proposal "Advisory Vote to Ratify Named Executive Officers' Compensation"	32,253
Retain observations for years from 2011 through 2020	31,520
Remove observations with missing SOP shareholder voting support data	30,981
Remove duplicate firm-year observations	30,583
Require SOP shareholder voting support to fall within the range of 0.67 to 0.73	805
Require SOP shareholder voting support in the following year to be not missing	648
Require independent variables between consecutive AGMs to be not missing	408
Final sample size for 2011 to 2019	408

This table shows the procedure for our sample construction.

Table 2, Descriptive statistics

	Full Sample = 408				
	Mean	Std. Dev.	Q1	Median	Q3
Δ SOP voting support	11.869	15.905	1.496	16.672	25.075
Δ Mood images	3.061	50.294	-5.000	0.000	2.000
Δ Return-on-assets	-0.019	0.169	-0.031	-0.001	0.020
Δ Operating loss	0.005	0.390	0.000	0.000	0.000
Δ Ln(market capitalization)	-0.014	0.531	-0.244	0.046	0.261
Δ Book-to-market	0.006	0.609	-0.134	-0.028	0.099
Δ TobinQ	0.019	0.864	-0.135	0.020	0.140
Δ Leverage	0.015	0.096	-0.014	0.001	0.039
Δ Sales growth	125.014	1365.149	-65.668	0.998	79.810
Δ Asset growth	-93.012	2805.602	-181.360	5.273	198.631
Δ Abnormal returns	0.002	0.552	-0.266	-0.004	0.264
Δ Stock return volatility	0.002	0.052	-0.025	0.000	0.026
Δ Institutional ownership	-0.006	0.115	-0.016	0.000	0.022
Δ Ln(analysts)	-0.028	0.380	-0.129	0.000	0.095
Δ ISS recommendation	0.350	0.648	0.000	0.000	1.000

This table shows descriptive statistics for the main variables in our sample of 408 firm-year-meeting observations from 2011 to 2020. We provide variable definitions in Appendix B.

Table 3, Comparison of the main variables between treatment and control samples

	Treated Mean	Control Mean	Difference	t-test	p-value
Δ SOP voting support	11.467	12.249	-0.782	-0.496	0.620
Δ Mood images	2.606	3.490	-0.884	-0.177	0.859
Δ Return-on-assets	-0.007	-0.030	0.023	1.381	0.168
Δ Operating loss	-0.025	0.033	-0.059	-1.518	0.130
Δ Ln(market capitalization)	0.013	-0.039	0.053	1.000	0.318
Δ Book-to-market	-0.028	0.037	-0.065	-1.079	0.281
Δ TobinQ	0.023	0.014	0.009	0.109	0.913
Δ Leverage	0.013	0.017	-0.004	-0.447	0.655
Δ Sales growth	216.335	38.911	177.424	1.313	0.190
Δ Asset growth	29.469	-208.494	237.963	0.856	0.393
Δ Abnormal returns	0.041	-0.035	0.076	1.395	0.164
Δ Stock return volatility	0.005	-0.001	0.006	1.246	0.213
Δ Institutional ownership	-0.001	-0.010	0.008	0.732	0.464
Δ Ln(analysts)	-0.037	-0.020	-0.017	-0.447	0.655
Δ ISS recommendation	0.298	0.400	-0.102	-1.592	0.112

This table compares univariate differences in main variables between treated group and control group. *Treated* includes firms with 67.00% to 69.99% SOP voting approval in the current annual meeting. *Control* includes firms with 70.00% to 73.00% SOP voting approval in the current annual meeting.

Table 4, The effect of a change in mood images on shareholder voting support

Dependent variable: *Δ SOP voting support*	Model 1	Model 2	Model 3
Δ Mood images	0.039*	0.040*	0.041*
	(1.839)	(1.952)	(2.042)
ISS investigation	0.969	1.304	1.641
	(0.663)	(0.927)	(1.249)
*Δ Mood images * ISS investigation*	-0.035**	-0.034**	-0.035**
	(-2.594)	(-2.339)	(-2.426)
Δ Return-on-assets	4.873*	5.919**	5.617**
	(1.927)	(2.360)	(2.325)
Δ Operating loss	-0.785	-0.926	-0.796
	(-0.820)	(-0.992)	(-0.900)
Δ Ln(market capitalization)	3.387*	4.106**	4.432**
	(1.940)	(2.268)	(2.442)
Δ Book-to-market	1.353	1.896	1.800
	(1.102)	(1.560)	(1.493)
Δ TobinQ	1.122	1.100	1.003
	(1.698)	(1.495)	(1.356)
Δ Leverage	3.314	6.157	6.003
	(0.450)	(0.822)	(0.779)
Δ Sales growth	-0.000	-0.000	-0.000
	(-1.432)	(-1.302)	(-0.549)
Δ Asset growth	-0.000	-0.000*	-0.000**
	(-1.337)	(-2.088)	(-2.246)
Δ Abnormal returns	-1.303	-2.040	-1.790
	(-0.936)	(-1.479)	(-1.483)
Δ Stock return volatility	-7.043	-2.927	-1.798
	(-0.387)	(-0.171)	(-0.099)
Δ Institutional ownership	-7.257	-9.735	-10.798*
	(-1.260)	(-1.663)	(-1.902)
Δ Ln(analysts)	-0.965	-0.752	-0.461
	(-1.209)	(-0.985)	(-0.663)
Δ ISS recommendation	16.047***	16.563***	16.061***
	(15.701)	(14.375)	(16.431)
Constant	5.764***	5.383***	5.375***
	(5.762)	(5.407)	(8.955)
Industry fixed effect	No	No	Yes
Year fixed effect	No	Yes	Yes
No. of observations	406	406	406
Adjusted R^2	0.432	0.435	0.456

This table tests the relation between the change of mood images in the annual report used by two groups of firms (treated firms by ISS investigation and control firms) and the change of shareholder voting support on SOP between two consecutive annual meetings that have SOP proposals. This table presents regressions using Eq. (1). Control variables include: *Δ Return-on-assets*, *Δ Operating loss*, *Δ Ln(market capitalization), Δ Book-to-market, Δ TobinQ, Δ Leverage, Δ Sales growth, Δ Asset growth, Δ Abnormal returns, Δ Stock return volatility, Δ Institutional ownership, Δ Ln(analysts), Δ ISS recommendation.* ***, **, and * indicate significance at the 1%, 5%, and 10% level using two-tailed tests. All regressions are clustered by Industry classified by Fama-French industry codes, t-statistics are in parentheses.

Table 5, Controlling for annual reports' textual and graphical characteristics.

Dependent variable: *Δ SOP voting support*	Model 1	Model 2	Model 3
Δ Mood images	0.048*	0.052**	0.053**
	(2.063)	(2.416)	(2.528)
ISS investigation	1.133	1.476	1.901
	(0.647)	(0.931)	(1.231)
*Δ Mood images * ISS investigation*	-0.050**	-0.053***	-0.054**
	(-2.659)	(-3.022)	(-2.694)
Δ Readability	0.220	0.042	0.002
	(1.192)	(0.188)	(0.007)
*Δ Readability * ISS investigation*	-0.149	-0.140	-0.044
	(-0.615)	(-0.591)	(-0.173)
Δ Sentiment	10.201	67.309	37.844
	(0.035)	(0.287)	(0.155)
*Δ Sentiment * ISS investigation*	-1312.122*	-1328.814*	-1141.295*
	(-1.973)	(-1.961)	(-1.810)
Δ Bullet point	0.078***	0.084***	0.073**
	(3.415)	(3.702)	(2.845)
*Δ Bullet point * ISS investigation*	-0.052	-0.054	-0.045
	(-0.887)	(-1.039)	(-0.699)
Δ Font color	0.000	0.011	-0.011
	(0.016)	(0.475)	(-0.783)
*Δ Font color * ISS investigation*	0.035	0.029	0.056*
	(0.815)	(0.780)	(2.048)
Δ Font size	-0.012*	-0.016**	-0.010
	(-1.992)	(-2.739)	(-1.176)
*Δ Font size * ISS investigation*	-0.004	-0.001	-0.006
	(-0.342)	(-0.139)	(-0.868)
Δ Infographics	-0.014	-0.019	0.001
	(-0.464)	(-0.620)	(0.037)
Δ Infographics ISS investigation*	0.036	0.028	-0.007
	(0.567)	(0.404)	(-0.177)
Δ Words	-0.000	-0.000	-0.000
	(-0.451)	(-0.251)	(-0.316)
*Δ Words * ISS investigation*	-0.000	-0.000	-0.000
	(-0.454)	(-0.667)	(-0.692)
Constant	5.841***	5.190***	5.138***
	(6.216)	(5.812)	(8.597)
Control variables	Yes	Yes	Yes
Industry fixed effect	No	No	Yes
Year fixed effect	No	Yes	Yes
No. of observations	406	406	406
Adjusted R^2	0.436	0.440	0.455

This table tests the relation between the change of mood images in the annual report used by two groups of firms (treated firms by ISS investigation and control firms) and the change of shareholder voting support on SOP between two consecutive annual meetings that have SOP proposals after controlling other annual report characteristics, including *Δ Readability, Δ Sentiment, Δ Bullet point, Δ Font color, Δ Font size, Δ Infographics, Δ Words*. ***, **, and * indicate significance at the 1%, 5%, and 10% level using two-tailed tests. All regressions are clustered by Industry classified by Fama-French industry codes. Control variables are the same as in table 4, t-statistics are in parentheses.

Table 6, Analyst coverage

Dependent variable: *Δ SOP voting support*	Model 1	Model 2	Model 3
*Δ Mood images * High ln(analysts)*	-0.057***	-0.061***	-0.055***
	(-5.284)	(-5.923)	(-4.871)
*Δ Mood images * ISS investigation * High ln(analysts)*	0.067***	0.060**	0.049**
	(3.869)	(2.720)	(2.120)
ISS investigation	0.903	1.277	1.329
	(0.501)	(0.758)	(0.803)
Δ Mood images	0.084***	0.089***	0.084***
	(4.018)	(4.588)	(4.134)
*Δ Mood images * ISS investigation*	-0.086***	-0.082***	-0.075***
	(-4.385)	(-3.699)	(-3.170)
High ln(analysts)	-1.220	-1.262	-0.406
	(-0.973)	(-0.949)	(-0.390)
*ISS investigation * High ln(analysts)*	0.141	0.058	0.621
	(0.087)	(0.035)	(0.427)
Control variables	Yes	Yes	Yes
Industry fixed effect	No	No	Yes
Year fixed effect	No	Yes	Yes
No. of observations	406	406	406
Adjusted R^2	0.430	0.434	0.453

This table presents regressions results for Equation (1) when we control for analyst coverage. *High ln(analysts)* indicator that equals 1 if the log value of the number of analysts following a firm in the next annual meeting is above the median sample value, and otherwise 0. ***, **, and * indicate significance at the 1%, 5%, and 10% level using two-tailed tests. All regressions are clustered by Industry classified by Fama-French industry codes. Control variables are the same as table 4, t-statistics are in parentheses.

Table 7, Institutional ownership

Panel A: Percentage institutional ownership

Dependent variable: *Δ SOP voting support*	Model 1	Model 2	Model 3
*Δ Mood images * Δ Institutional ownership*	-0.511	-0.460	-0.494
	(-1.667)	(-1.670)	(-1.667)
*Δ Mood images * ISS investigation * Δ Institutional ownership*	0.603**	0.566**	0.611**
	(2.295)	(2.362)	(2.494)
ISS investigation	0.828	1.185	1.530
	(0.595)	(0.890)	(1.290)
Δ Mood images	0.049*	0.049**	0.051**
	(1.972)	(2.133)	(2.238)
*Δ Mood images * ISS investigation*	-0.046***	-0.045***	-0.047***
	(-2.990)	(-3.037)	(-3.195)
Δ Institutional ownership	-13.552	-16.557*	-18.749*
	(-1.514)	(-1.752)	(-1.978)
*ISS investigation * Δ Institutional ownership*	3.250	4.674	6.253
	(0.185)	(0.270)	(0.346)
Control variables	Yes	Yes	Yes
Industry fixed effect	No	No	Yes
Year fixed effect	No	Yes	Yes
No. of observations	406	406	406
Adjusted R^2	0.431	0.433	0.455

Panel B. Blockholder ownership

Dependent variable: *Δ SOP voting support*	Model 1	Model 2	Model 3
*Δ Mood images * Δ Blockholder ownership*	-0.492**	-0.488***	-0.431**
	(-2.364)	(-2.923)	(-2.726)
*Δ Mood images * ISS investigation * Δ Blockholder ownership*	0.685***	0.732***	0.643***
	(3.143)	(3.694)	(4.400)
ISS investigation	1.008	1.349	1.636
	(0.700)	(0.959)	(1.226)
Δ Mood images	0.034	0.036	0.037*
	(1.530)	(1.698)	(1.847)
*Δ Mood images * ISS investigation*	-0.032*	-0.031*	-0.033**
	(-2.068)	(-2.108)	(-2.290)
Δ Blockholder ownership	-3.512	-3.423	-1.604
	(-0.550)	(-0.503)	(-0.240)
*ISS investigation * Δ Blockholder ownership*	-6.589	-6.794	-2.913
	(-0.579)	(-0.623)	(-0.293)
Control variables	Yes	Yes	Yes
Industry fixed effect	No	No	Yes
Year fixed effect	No	Yes	Yes
No. of observations	406	406	406
Adjusted R^2	0.431	0.434	0.454

Panel C. Domestic institutional ownership

Dependent variable: *Δ SOP voting support*	Model 1	Model 2	Model 3
*Δ Mood images * Δ Domestic institutional ownership*	-0.514*	-0.483**	-0.511**
	(-2.056)	(-2.336)	(-2.302)
*Δ Mood images * ISS investigation * Δ Domestic institutional ownership*	0.627**	0.615***	0.648***
	(2.603)	(2.983)	(3.046)
ISS investigation	0.895	1.269	1.601
	(0.646)	(0.961)	(1.372)
Δ Mood images	0.049*	0.049**	0.051**
	(1.983)	(2.135)	(2.237)
*Δ Mood images * ISS investigation*	-0.047***	-0.046***	-0.048***
	(-3.027)	(-3.048)	(-3.211)
Δ Domestic institutional ownership	8.330	8.912	2.849
	(0.318)	(0.332)	(0.104)
*ISS investigation * Δ Domestic institutional ownership*	3.468	5.408	8.119
	(0.223)	(0.354)	(0.508)
Control variables	Yes	Yes	Yes
Industry fixed effect	No	No	Yes
Year fixed effect	No	Yes	Yes
No. of observations	406	406	406
Adjusted R^2	0.430	0.433	0.455

This table presents regressions results for Equation (1) when we control for institutional ownership, blockholdings and domestic institutional ownership. *Δ Institutional ownership* represents a change in institutional ownership between the current and next annual meetings. *Δ Blockholder ownership* represents a change in the value of ownership by institutional blockholders. *Δ Domestic institutional ownership* is the change in the value of ownership by domestic institutional investors. ***, **, and * indicate significance at the 1%, 5%, and 10% level using two-tailed tests. All regressions are clustered by Industry classified by Fama-French industry codes. Control variables are the same as table 4, t-statistics are in parentheses.

Table 8, Sentiment

Panel A. Bearish investor sentiment

	Model 1	Model 2	Model 3
*Δ Mood images * Δ Investor sentiment bearish*	0.021	0.035	0.017
	(0.176)	(0.290)	(0.174)
*Δ Mood images * ISS investigation * Δ Investor sentiment bearish*	-0.250**	-0.230*	-0.205**
	(-2.189)	(-2.072)	(-2.325)
ISS investigation	0.218	0.498	0.781
	(0.154)	(0.353)	(0.617)
Δ Mood images	0.039*	0.040*	0.040**
	(2.065)	(2.119)	(2.225)
*Δ Mood images * ISS investigation*	-0.020	-0.022	-0.023
	(-1.382)	(-1.480)	(-1.490)
Δ Investor sentiment bearish	-25.758***	-5.689	-5.741
	(-2.996)	(-0.677)	(-0.812)
*ISS investigation * Δ Investor sentiment bearish*	37.117**	34.331**	33.152**
	(2.452)	(2.375)	(2.592)
Control variables	Yes	Yes	Yes
Industry fixed effect	No	No	Yes
Year fixed effect	No	Yes	Yes
No. of observations	406	406	406
Adjusted R^2	0.440	0.441	0.461

Panel B. Winter season

	Model 1	Model 2	Model 3
*Δ Mood images * Season*	0.023	0.025	0.020
	(0.958)	(1.002)	(0.918)
*Δ Mood images * ISS investigation * Season*	-0.435***	-0.470***	-0.063
	(-4.135)	(-3.920)	(-0.347)
ISS investigation	1.278	1.634	1.911
	(0.872)	(1.137)	(1.406)
Δ Mood images	0.035	0.036	0.038
	(1.505)	(1.595)	(1.723)
*Δ Mood images * ISS investigation*	-0.030*	-0.029*	-0.032*
	(-1.946)	(-1.792)	(-1.973)
Season	4.385	3.553	3.454
	(1.359)	(1.023)	(1.112)
*ISS investigation * Season*	-3.191	-4.271	-6.768
	(-0.951)	(-0.994)	(-1.726)
Control variables	Yes	Yes	Yes
Industry fixed effect	No	No	Yes
Year fixed effect	No	Yes	Yes
No. of observations	406	406	406
Adjusted R^2	0.430	0.433	0.452

This table presents regressions results for Equation (1) when we control for sentiment. *Δ Investor sentiment bearish* represents a change in the percentage of individual investors who are bearish between the current and the next annual meetings. *Season* equals 1 if the next annual meeting happens in winter, and is 0 otherwise. ***, **, and * indicate significance at the 1%, 5%, and 10% level using two-tailed tests. All regressions are clustered by Industry classified by Fama-French code. Control variables are the same as table 4, t-statistics are in parentheses.

Table 9, Number of proposals

Dependent variable: *Δ SOP voting support*	Model 1	Model 2	Model 3
*Δ Mood images * Δ Number of proposals*	0.011**	0.013**	0.012**
	(2.121)	(2.704)	(2.739)
*Δ Mood images * ISS investigation * Δ Number of proposals*	-0.020*	-0.019*	-0.017
	(-1.961)	(-1.891)	(-1.617)
ISS investigation	0.870	1.229	1.580
	(0.586)	(0.853)	(1.175)
Δ Mood images	0.028	0.027	0.030*
	(1.640)	(1.635)	(1.805)
*Δ Mood images * ISS investigation*	-0.020*	-0.018	-0.021*
	(-1.994)	(-1.714)	(-1.891)
Δ Number of proposals	-0.660	-0.648	-0.646
	(-1.244)	(-1.279)	(-1.261)
*ISS investigation * Δ Number of proposals*	1.110	1.104*	1.141
	(1.668)	(1.822)	(1.713)
Control variables	Yes	Yes	Yes
Industry fixed effect	No	No	Yes
Year fixed effect	No	Yes	Yes
No. of observations	406	406	406
Adjusted R^2	0.435	0.438	0.459

This table presents regressions results for Equation (1) when we control for the change in the number of proposals between annual meetings. *Δ Number of proposals* is the change in the total number of proposals to be voted in the next annual meeting versus the current annual meeting. ***, **, and * indicate significance at the 1%, 5%, and 10% level using two-tailed tests. All regressions are clustered by Industry classified by Fama-French code. Control variables are the same as table 4, t-statistics are in parentheses.