

# The Impact of Graphical Displays of Non-GAAP Earnings Measures on Professional and Inexperienced Investors' Earnings Judgments

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**Data Availability:** Contact the first author.

## **The Impact of Graphical Displays of Non-GAAP Earnings Measures on Professional and Inexperienced Investors' Earnings Judgments**

This study presents the results of an experiment that examines the effects graphical interactive data views (IDVs) on inexperienced and professional investors' earnings judgments. Participants viewed a simulated investor relations web site for a large drug retailer and made judgments regarding fourth quarter and fiscal year earnings. We found that presenting pro forma information in graphical IDVs increased inexperienced investors' earnings judgments, but did not affect professionals' judgments. The relative amount of time inexperienced investors spent examining pro forma as opposed to GAAP earnings IDVs appears to explain this effect. We also found that the presence of pro forma earnings text disclosures did not affect either inexperienced or professionals' earnings judgments. However, these disclosures had differential effects on the relative amount of time that inexperienced and professional investors spent examining both income statement and quarterly earnings press release information. These findings suggest a need to further examine the effects of pro forma earnings presentation format and IDV content in online financial disclosure environments, especially since current SEC regulations only specify the content of pro forma disclosures; they do not address information presentation beyond text format press releases.

## **The Impact of Graphical Displays of Non-GAAP Earnings Measures on Professional and Inexperienced Investors' Earnings Judgments**

### **INTRODUCTION**

Prior to the issuance of SEC Regulation G (SEC 2003), companies enjoyed considerable latitude in the disclosure of quarterly financial information. If managers wished, they could disclose non-GAAP, or so-called pro forma earnings measures adjusted for items deemed transitory or non-representative of future earnings. Proponents of this approach claim that non-GAAP measures provide investors with information that is more relevant in predicting future performance than GAAP earnings (Henry 2001; Nyberg 2004). Critics of non-GAAP measures assert that allowing management wide discretion in earnings disclosures produces figures that are misleading, especially to less sophisticated investors (Weil 2001). In response to these concerns, SEC Regulation G established rules for the disclosure of non-GAAP earnings which require that any non-GAAP information disclosed in an earnings release be reconciled with the relevant GAAP figures. Recent experimental (Elliott 2006) and archival (Allee et al. 2007) research suggests that reconciling non-GAAP to GAAP earnings disclosures indeed mitigates the extent to which less sophisticated investors rely on non-GAAP information.

While the SEC mandates reconciling non-GAAP to GAAP earnings in a company's text earnings press release, it does not regulate other disclosure formats, such as supplemental graphical disclosures that might appear either in a company's annual report or elsewhere on company's web site. Companies occasionally display graphs of pro forma earnings measures in their annual reports.<sup>1</sup> A potentially more important issue with respect to non-GAAP information,

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<sup>1</sup> For example, the Hartford Financial Services Group 2005 annual report displays a graph of diluted core earnings per share. A footnote informs the reader that this is a non-GAAP measure and describes the adjustments made to GAAP earnings to determine the figure. However, the reader must access a separate document to view a non-GAAP to GAAP reconciliation.

however, is the increasing use of interactive graphical display tools, or interactive data views (IDVs) on Investor Relations web sites (Economist Intelligence Unit 2003, Thomson Financial 2007). IDVs allow users to view customized displays of financial information and typically provide a wide array of financial and non-financial information for the user to choose from. Proponents of interactive analysis tools claim that they will help improve the quality of financial information (Baldwin et al. 2006; Thomson Financial 2007). However, companies are currently not required to have the financial information displayed on interactive web sites conform to GAAP or any other accepted accounting framework.<sup>2</sup> In the case of non-GAAP earnings, an interactive graphical display may show the figures, without information reconciling the non-GAAP earnings to GAAP.

Examining the effects of non-GAAP graphical earnings displays on the judgments of less sophisticated investors is important since such investors may be more likely to acquire and integrate this information than professionals. Hodge and Pronk (2006) provide evidence that inexperienced investors are more likely to use html format financial statements, while professional investors are more likely to use financial statements in pdf format. This in turn suggests that less experienced investors are more likely to employ online interactive analysis tools, as html links provide access to such tools, while current pdf displays typically do not. Further, graphical presentation formats are considered to be effective since the visual sense is the dominant human sense (Ackerman 1991; Ware 2004), thus financial information displayed to inexperienced investors in graphs may be more salient than that displayed in text format. Also, research suggests financial information in graphs, rather than tables, may be easier for many financial statement users to process (Vessey 1991; Vessey and Galletta 1991), especially with

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<sup>2</sup> For example, BP's Interactive Analyst tool displays a variety of GAAP and non-GAAP financial measures. See <http://production.investis.com/bp2/ia/annualdata2006/> (accessed June 20, 2007).

respect to evaluating financial performance trends. Hence, less experienced investors' tendency to use interactive graphical displays to a greater extent, combined with salience of graphical information and the relative ease of acquiring information from these displays suggests that non-GAAP earnings information presented in graphical displays will have a greater impact on inexperienced than on professional investors' judgments.

Our research extends earlier studies which examine the effects of disclosing pro forma earnings in a press release and accompanying income statement (Frederickson and Miller 2004; Elliott 2006) to investigate whether presenting pro forma financial information using graphical interactive data views (IDVs) influences both professional and inexperienced investors' judgments. This is an important issue, since within an online environment, companies can alter the presentation format of their basic financial statements to meet user-specific demands and critics argue that less sophisticated investors may be misled by pro forma earnings disclosures (Weil 2001). Unlike text press releases, the SEC does not specify the content of supplemental online displays.

Furthermore, our study examines online financial information acquisition behavior by tracking the amount of time that an individual spends examining various parts of a set of financial disclosures. Although other studies have examined online financial information acquisition behavior (e.g., Hodge et al. 2004), our study is unique in that it specifically investigates how the presence of pro forma earnings information in a graphical format affects professional and inexperienced investors' financial information acquisition behavior.

One hundred twenty-six undergraduate accounting students participated in our study as proxies for inexperienced investors. Fifty-seven professionals whose job duties involve regular analysis of financial statements and trading of securities also participated. They viewed a

simulated Investor Relations web site for a large drug retailer. Non-recurring items caused the most recent quarterly and annual pro forma income to be higher than GAAP income. Participants were asked to evaluate the company's most recent quarterly and annual earnings.

Our results indicate that interactive graphical disclosures of pro forma earnings information had the predicted effect of increasing inexperienced participants' fiscal year earnings judgments, but did not affect professionals' judgments. Process data showed that the presence of text information had differential effects on the two groups' information acquisition behavior. Inexperienced investors spent relatively more time examining non-GAAP information presented in IDVs than did professionals. Further, the proportion of time inexperienced investors spent acquiring non-GAAP IDV information was positively related to their fiscal year earnings judgments. On average, inexperienced investors tended to use a sequential, as opposed to a directed search strategy to a greater extent than professionals. However, search strategy direction was not related to fiscal year earnings judgments. Inexperienced investors tended to spend relatively more time acquiring earnings information when the earnings statement included pro forma information; in contrast, professionals spent relatively less time. The presence of pro forma information did not affect the relative amount of time inexperienced investors spent viewing the earnings press release, on the other hand, professionals spent relatively more time examining the press release when pro forma earnings disclosures were present.

These findings suggest a need to further examine the effects of pro forma earnings presentation format and IDV content in online financial disclosure environments, especially since current SEC regulations only specify the content of pro forma disclosures; they do not address information presentation issues.

## HYPOTHESES AND RESEARCH QUESTIONS

### **Investor Judgments**

Frederickson and Miller (2004) found that inexperienced investors make higher judgments of firm value when the firm discloses pro forma earnings that are higher than GAAP earnings. At the same time, the disclosure of pro forma earnings did not affect professionals' firm value judgments. Similarly, Elliott (2006) found that inexperienced investors' earnings and investment judgments were higher when pro forma earnings were disclosed than when the earnings announcement only contained GAAP earnings, but that the disclosure of pro forma earnings did not affect professionals' judgments.

IDVs allow the user to choose both the information displayed (i.e., revenues, earnings, balance sheet accounts or cash flows) and the format of display (i.e., table or graph). In this study, we focus on graphical IDV content. Supporters of graphical presentation formats argue that they are effective since the visual sense is the dominant human sense (Ackerman 1991; Ware 2004). Research suggests financial information in graphs, rather than tables, may be easier for many financial statement users to process (Vessey 1991; Vessey and Galletta 1991), especially with respect to evaluating financial performance trends.

Cognitive psychology research suggests that the processing impact of information salience may be separate from that of information diagnosticity (Taylor and Fiske 1978). Salient information is highly visible and easily noticed by the decision maker, and the resulting focus on this information can cause decision makers to overweight a cue (Wallsten, 1980; Fiske and Taylor 1991). The dominance of the visual sense thus increases the salience of the graphical presentation of information relative to text information. Further, since the visual presentation may be easier for inexperienced investors to process (Vessey 1991; Vessey and Galletta 1991),

they may weight graphical information more heavily in evaluating earnings and investment potential. Thus, pro forma earnings information presented in IDV graphs may influence the earnings judgments of inexperienced investors. At the same time, since research suggests that professional investors' judgments are not affected by pro forma earnings information presented in text format (Frederickson and Miller 2004; Elliott 2006), it is unlikely that graphical displays of pro forma earnings will affect professional investors' judgments, either. This leads to the following hypotheses:

H1a: When pro forma earnings are higher than GAAP earnings, the earnings judgments of inexperienced investors will be higher when they are presented with graphical IDVs containing both pro forma and GAAP earnings information rather than only GAAP earnings information.

H1b: When pro forma earnings are higher than GAAP earnings, the earnings judgments of professional investors will not differ whether they are presented with graphical IDVs containing both pro forma and GAAP earnings information or only GAAP earnings information.

Graphs of financial information do not exist in isolation, but in conjunction with other information material contained in text format. Hence, the effects of pro forma earnings information presented in graphical displays may vary depending on the accompanying text information. SEC Regulation G mandates that companies making text disclosures of pro forma earnings figures reconcile these measures. Hence, a company's text earnings disclosure must either present GAAP "bottom line" information only or show pro forma figures reconciled to GAAP. Elliott (2006) found that inexperienced investors' earnings judgments based on a document containing pro forma earnings reconciled to GAAP did not differ from those based on

GAAP only disclosures. Elliott's (2006) results are based on one specific reconciliation type—a columnar, side-by-side format. However, recent empirical results suggest that pro forma to GAAP earnings reconciliations do mitigate the impact of pro forma earnings disclosures on inexperienced investors' judgments, regardless of reconciliation format (Allee et al. 2007).

While research evidence suggests that pro forma earnings information reconciled to GAAP will not affect less experienced investors' judgments, it is still possible that the effect of graphical displays of pro forma information will vary, depending on the type of text earnings disclosure. When text disclosures contain only GAAP earnings information, it is likely that graphical displays of pro forma earnings information will influence inexperienced investors' judgments, since the graphical display will be more salient to these individuals and thus have a greater influence on their judgments. When text materials disclose pro forma earnings reconciled to GAAP, the possible effect of graphical displays of pro forma earnings is ambiguous. Given the saliency of the graphical format, it is possible that inexperienced investors may focus on the graphed information and ignore the information conveyed by the pro forma to GAAP reconciliation in the text format. Alternately, since the reconciliation contains information about the differences between GAAP and non-GAAP earnings not contained in the graph, the presence of a text pro forma to GAAP reconciliation may mitigate the effects of the graphical display of non-GAAP earnings on judgments. Hence, it is unclear whether the effects of graphical pro forma information on inexperienced investors' judgments will be consistent or differ across different types of text disclosure. Thus, we propose that graphical and text disclosures of pro forma earnings will have an interactive effect on inexperienced investors' judgments, without specifying a specific form for the interaction. At the same time, we predict that there will not be an interactive effect on professionals' judgments, since earlier research indicates that the

presence of pro forma earnings information does not significantly affect more experienced investors' judgments, whether or not the information is reconciled to GAAP figures (Elliott 2006). This leads to the following hypotheses.

H2a: The effects of graphical IDV displays of pro forma earnings information on inexperienced investors' earnings judgments will vary depending on whether the IDVs are accompanied by GAAP only or by pro forma reconciled to GAAP earnings text information.

H2b: The effects of graphical IDV displays of pro forma earnings information on professional investors' earnings judgments will not vary depending on whether the IDVs are accompanied by GAAP only or by pro forma reconciled to GAAP earnings text information.

### **Information Acquisition**

Hodge and Pronk's (2006) study of investor online information acquisition behavior found that professional investors are more likely to use financial statements in pdf format, while inexperienced investors are more likely to use html format financial statements. One possible explanation is that at the present time, the majority of professional investors have been trained to analyze hard copy financial statements, thus they choose to use the online format that more closely resembles hard copy statements. Applicable to this study, Hodge and Pronk's (2006) results suggest that professionals may be more likely to use text information and less likely to use graphical IDVs than inexperienced investors. Thus, we hypothesize::

H3: Inexperienced investors will spend a higher proportion of their total information search time examining graphical IDVs than professional investors.

In this study, we examine not only the total time participants spend examining graphical IDVs relative to other types of information, but also the amount of time investors spend

examining IDVs containing pro forma as opposed to GAAP information. An important difference between graphical and text displays of pro forma earnings is that the graphical displays do not contain information concerning items reconciling pro forma to GAAP earnings. Professionals are more likely to be familiar with pro forma to GAAP reconciliations than inexperienced individuals, and will likely spend less time examining information displays that do not contain reconciling information.

Not only should professionals and inexperienced investors differ in the relative amount of time spent examining graphical IDVs containing pro forma information, but the relationship between time spent examining these items and earnings judgments should differ for the two groups. For inexperienced investors, graphical IDVs are expected to make pro forma earnings information more salient, even though such displays lack reconciling items information. Thus for inexperienced investors, when pro forma earnings are greater than GAAP earnings, there should be a positive relationship between the amount of time spent examining graphical displays of pro forma earnings information and their earnings judgments. Professionals are expected to place less reliance on graphical displays of pro forma earnings, since the displays lack reconciling items information. Hence, for professionals, there will be no relationship between the amount of time spent examining graphical displays of pro forma earnings information and their earnings judgments. This suggests the following hypotheses.

H4a: Inexperienced investors will spend relatively more time examining graphical pro forma earnings information than professionals.

H4b: When pro forma earnings are greater than GAAP earnings, there will be a positive relationship between the relative amount of time inexperienced investors spend examining pro forma earnings information and their earnings judgments.

H4c: There will be no relationship between the relative amount of time professional investors spend examining pro forma earnings information and their earnings judgments.

Information search strategies may also affect investors' earnings judgments. Yates (1990) indicates that less experienced decision makers tend to search through all available information in a relatively sequential manner. A more experienced decision maker should develop a more sophisticated search strategy. Specifically, Anderson (1988) indicates that more experienced decision makers become more directive in their search patterns. Hunton and McEwen (1997) find that financial analysts who follow a directed, as opposed to a sequential search strategy tend to have more accurate earnings forecasts. In the present study, there is no criterion for a "correct" earnings evaluation. Hence, while the earnings judgments of sequential and directed information searchers may differ, we cannot predict the direction of the effect of search strategy. This leads to the following hypotheses:

H5a: Inexperienced investors' information search patterns will be more sequential than professional investors'.

H5b: Search strategy (i.e., sequential vs. directive) will be associated with earnings judgments.

## **METHOD**

### **Task and Design**

Participants viewed online information about a hypothetical company called Drugs R Us (DRU), which was modeled on a large retailer of pharmaceutical products and other health care items. The company was chosen because (1) it reported pro forma earnings in the past, and (2) its Investor Relations website includes an interactive financial information display. Materials were

pilot tested with six Masters' of Accounting students and 10 students in a masters' level Management Information Systems class.

Participants first read a brief introduction to the experimental task, then navigated to a page that displayed an overview of DRU's operations (see Figure 1). From this page, participants could navigate to DRU's earnings press release, its financial statements, or "interactive financial history" pages, which were static bar graph displays of key financial information.<sup>3</sup> The press release and financial statements contained information on DRU's fourth quarter and annual financial performance for the current and previous year. The graphical displays presented annual performance measures for the current and previous four years (see Figure 2). After reviewing financial information on DRU, participants responded to a set of questions concerning the company's earnings performance and its desirability as an investment. They evaluated earnings performance by responding to questions on 11-point scales ranging from Very Weak (0) to Very Strong (10). After confirming their responses, participants then completed a second questionnaire to gather demographic data and experience with investing, financial statement analysis, and interactive data displays. The experimental software generated a log for each participant, recording the order of pages visited at the simulated web site and how much time was spent on each page. The log data were used to compute various process measures (e.g., total time spent on each web site section) for each participant.

Insert Figures 1 and 2 about here.

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<sup>3</sup> The "IDV" displays used in this study were not truly interactive like IDVs found on Investor Relations web sites. Static displays were chosen for two reasons. First, we wanted to be able to limit the display options open to participants. Otherwise, the experimental task could potentially have been very difficult for participants without significant experience using IDVs. Second, it was considerably easier to program experimental software to track information acquisition using static, as opposed to truly interactive, displays.

The experiment used a 2 by 2 by 2 between-participants design. Independent variables were participant type (inexperienced or professional investor), text disclosure content (GAAP only or pro forma emphasis), and IDV content (GAAP only or including pro forma earnings). Press release and income statement content varied across text disclosure conditions. Participants in the GAAP only disclosure condition viewed a press release which disclosed GAAP earnings, followed by a discussion of non-recurring items. The GAAP income statement included footnotes describing non-recurring items. The press release in the pro forma emphasis disclosure condition disclosed earnings excluding non-recurring items, followed by a discussion of the non-recurring items. The income statement in this condition presented fourth quarter and annual earnings (loss) and diluted earnings per common share excluding non-recurring items, followed by sequential reconciliations of these figures to GAAP earnings (loss) and earnings per share (see Figure 1). Footnotes described the non-recurring items.

Participants receiving GAAP only IDV content saw a menu bar as displayed in Figure 3. Those provided with pro forma IDV content saw the menu bar displayed in Figure 2. They had the option of viewing graphs of either pro forma or GAAP information for net earnings, earnings per share, and cash flows from operations and operating profit.

Insert Figure 3 about here.

### **Press Release**

The earnings announcement was patterned after an actual earnings announcement for the company on which the experimental materials were based. The first part of the earnings announcement gave comparative sales information; this section was the same across

experimental conditions. The second part was a narrative that stated current and comparative amounts for fourth quarter and annual earnings. This section presented either GAAP or pro forma earnings, depending on the experimental condition. Consistent with the company disclosures used to develop the experimental materials, pro forma earnings were labeled as earnings excluding non-recurring items. The third part of the earnings release gave details of non-recurring items, and was identical across experimental conditions. Non-recurring items were: (1) a charge for restructuring and asset impairment costs, which affected the current quarter and year's results and (2) a litigation settlement gain, which affected the previous year's results.

As with other pro forma earnings judgment studies (Frederickson and Miller 2004; Elliott 2006), the current quarter and year pro forma earnings were greater than GAAP earnings. Drugs R Us reported a fourth quarter 2004 GAAP loss of (\$0.34) per share and a pro forma profit of \$0.48 per share. For the 2004 fiscal year, GAAP and pro forma profits were \$1.01 and \$1.79, respectively. However, consistent with the company used to develop the experimental materials, previous year pro forma annual earnings were less than GAAP earnings. (See Figure 1.) The fourth, and final section of the earnings release presented summary information regarding changes in the company's operations. This section was also identical across experimental conditions. Income statements, balance sheets, and statements of retained earnings were presented as separate, hyperlinked documents.

## **Participants**

One hundred twenty-six undergraduate students enrolled in an introductory auditing class at a large state university participated in the study as proxies for inexperienced investors.

Professional investors were 57 individuals whose job duties involve regular analysis of financial statements and trading of securities. Professional participants reported experience ranging from 2 to 24 years, with a mean of 10.6 years. Participants were randomly assigned to experimental conditions.

We asked participants to report their level of familiarity with financial statement information, interactive data displays, interactive displays of financial information, the concept of pro forma earnings, and pro forma to GAAP earnings reconciliations. On average, professionals reported higher levels of familiarity with two of these items: interactive displays of financial information ( $p = .02$ ) and pro forma to GAAP earnings reconciliations ( $p = .001$ ).<sup>4</sup>

H1a assumes that participants are viewing graphical IDV information. Two student participants did not view any IDV information. These were dropped from the analysis, resulting in 124 students in the sample.

### **Procedure**

Student participants completed the experimental task in a computer lab under the supervision of one of the researchers. Thirty-seven of the professional participants also completed the experimental task in a computer lab under the supervision of one of the researchers. The remaining 20 professional participants completed the experimental task at their desks, after trading hours, so that their completion of the experimental task would not be interrupted.

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<sup>4</sup> In addition to the main effects reported here, there was an interactive text disclosure by IDV content effect for financial statement familiarity ( $p = .03$ ). Participants reported higher levels of financial statement familiarity in experimental conditions where both text disclosure and IDV content were consistent (i.e., both GAAP only or both containing pro forma information). To test whether this affected our results, we ran all tests where participants' fiscal year earnings judgment is a dependent measure using financial statement familiarity as a covariate. None of the results were substantively different from the results presented in the paper.

## RESULTS

### Investor Judgments

Table 1 displays descriptive statistics for the earnings judgment data by participant type and experimental condition. We used a set of orthogonal planned comparisons to analyze these data (Buckless and Ravenscroft 1990). The column headed Without Process Covariates in Table 2 shows these results. Inexperienced investors' average earnings judgments (4.90) were higher than professionals' (3.65) ( $t(df = 173) = 4.765$ ;  $p = .001$ ). Text disclosure of pro forma earnings information did not affect either inexperienced ( $t(df = 173) = -.236$ ;  $p = .81$ ) or professional ( $t(df = 173) = .091$ ;  $p = .93$ ) investors' earnings judgments.

Insert Tables 1 and 2 about here

Inexperienced investors' mean assessments of fiscal year earnings are 10.6 percent higher when graphical IDV displays contained pro forma earnings information (5.18) than when they contained only GAAP information (4.63) ( $t(df = 173) = 1.854$ ;  $p = .03$ ), as predicted by H1a. Text disclosure and IDV content did not have an interactive effect on inexperienced investors' judgments ( $t(df = 173) = .773$ ;  $p = .44$ ), failing to confirm with H2a. Professionals' mean evaluations of fiscal year earnings did not differ, depending on whether graphical IDVs contained pro forma (3.79) or GAAP only (3.52) earnings information ( $t(df = 173) = .627$ ;  $p = .53$ ), consistent with H1b. Also, text disclosure and IDV content did not have an interactive effect on professionals' evaluations ( $t(df = 173) = .168$ ;  $p = .87$ ), consistent with H2b.

### Information Acquisition

Table 3 presents information acquisition data for inexperienced and professional investors. On average, professionals total time acquiring information from the Investor Relations web site (847.99 seconds) was 23.7 percent higher than inexperienced investors (685.68) ( $p <$

.01). Professionals spent more time examining the press release and income statement than inexperienced investors ( $p < .01$  for both), but did not spend more time examining IDVs ( $p = .57$ ) or the balance sheet ( $p = .41$ ).

H3 predicts that the *proportion* of time inexperienced investors spend examining IDVs out of their total information search time will be greater than for professional investors. As predicted, these participants spent a greater proportion of time examining IDVs (.188) than professionals (.153) ( $p = .004$ ). Also, inexperienced investors spent a smaller proportion of time (.164) examining the text income statement than did professionals (.189) ( $p = .06$ ) and spent a larger proportion of time examining the balance sheet (.075) than professionals (.055) ( $p = .004$ ).

Insert Table 3 about here.

Further analysis showed a significant interaction between participant type and text disclosure content for the proportion of information acquisition time spent on the income statement ( $p = .01$ ) and a marginally significant interaction for the proportion of time spent on the press release ( $p = .10$ ). Panel A of Figure 4 displays the interaction for proportion of time spent on the income statement. Inexperienced investors spent a larger proportion of time examining the income statement when it contained pro forma (.178) as opposed to GAAP only information (.153). Professionals provided with pro forma earnings text disclosures spent a smaller proportion of time examining the income statement (.168) than did those provided with GAAP only disclosures (.209). Panel B of Figure 4 displays the interaction for proportion of time spent on the press release. The proportion of time spent by inexperienced investors was not affected by text disclosure content, but professionals provided with pro forma earnings text disclosures spent a higher proportion of time examining the press release (.317) than did those provided with GAAP only earnings disclosures (.253).

H4a predicts that inexperienced investors will spend relatively more time examining graphical pro forma earnings information than professionals. To test this hypothesis, we constructed two variables: PFINCIDV and PFTOTIDV. For participants given IDVs containing pro forma earnings information, PFINCIDV is defined as the time spent viewing IDVs containing pro forma net earnings information divided by the total time spent viewing IDVs containing net earnings information (both pro forma and GAAP). Similarly, PFTOTIDV is defined as the total time spent viewing all IDVs containing pro forma information (net earnings, EPS, or cash flows from operations and operating profit divided by the total time spent viewing both GAAP and pro forma IDVs of these three measures). For participants given GAAP only IDVs, both PFINCIDV and PFTOTIDV assume a value of zero.

To test H4a, we compared PFINCIDV and PFTOTIDV for inexperienced investors and professionals provided with IDVs containing pro forma earnings information. The mean value of PFINCIDV was greater for professionals (.613) than for inexperienced investors (.524) ( $p = .04$ ). Also, the mean value of PFTOTIDV was greater for professionals (.621) than for inexperienced investors (.513) ( $p = .001$ ). Thus, the results run contrary to those predicted by H4a.

H5a predicts that inexperienced investors are more likely to exhibit a sequential search strategy than professional investors. Similar to Hunton and McEwen (1997) we constructed an item sequence (ISEQ) variable to measure cognitive search strategy. First, we recorded a sequential log number for each item the participant accessed. Second, we labeled each item by a position number indicating its position in the navigation menu on the right hand side of the computer screen. Then, we correlated the log numbers and menu position numbers, and the resulting correlation coefficients constitute the ISEQ variable. A sequential searcher would look at the items in the order they appear in the navigation menu, hence have a high degree of

correlation between the log and position numbers. Directive searchers should search for specific information items and will have a lower degree of correlation between log and position numbers.

ISEQ for the participants in our sample ranged from -.488 to 1.000, with a mean of .178 and standard deviation of .393. Seventy-three, or 40.3 percent of participants had negative ISEQ values. A large negative ISEQ value could result from a sequential search strategy where participants look at the items at the bottom of the navigation menu first, then proceed in backwards order. An individual who examines the graphical IDVs first, followed by financial statements, would exhibit such a search strategy. Large negative ISEQ values could make a group of participants appear on average to be following a directive search strategy when some of them are actually viewing information in a reverse sequence. To address this issue, we also computed the absolute value of ISEQ for each participant, labeling this variable ABSISEQ.

Inexperienced participants had higher ISEQ values on average (.216) than professionals (.097) ( $p = .05$ ). They also had higher average ABSISEQ values (.355) than professionals (.249) ( $p = .02$ ). Thus, results for both search direction measures confirm H5a, indicating that inexperienced investors use more sequential search strategies.

H4b predicts a relationship between the proportion of time inexperienced investors spend examining pro forma IDV information and earnings judgments, while H4c predicts no such relationship for professionals. H5b predicts a relationship between search strategy and earnings judgments. To test these hypotheses, we added process measure covariates to the model used to test H1a through H2b. Table 1 displays the analysis results with covariates in the column headed With Process Covariates. Since we predict differential effects for the two participant groups, PFINCIDV: Inexperienced assumes the value of PFINCIDV, for inexperienced participants, and 0 for professionals. Similarly PFINCIDV: Professionals assumes the value of PFINCIDV for

professional, and 0 for inexperienced participants. If PFINCIDV indeed explains the significant pro forma IDV display effect observed for inexperienced participants, it should have a positive sign and the IDV within inexperienced contrast should become non-significant in the analysis model. We use ABSISEQ as a covariate to test the effects of information search sequence on earnings judgments, but do not partition this variable since we do not predict differential information search effects across participant groups.

PFINCIDV has a significant positive effect on inexperienced participants' earnings judgments ( $t(df = 170) = 1.685; p = .05$ ), as predicted by H4b.<sup>5</sup> At the same time, the IDV comparison within inexperienced investors is not significant. Considered together, the two results suggest that it is not the mere presence of an IDV display of pro forma earnings, but rather, the relative amount of time inexperienced investors spend examining pro forma as opposed to GAAP net earnings information that explains the effects of the pro forma IDV display on their earnings judgments. Also, as predicted by H4c, PFINCIDV does not significantly affect professionals' earnings judgments ( $t(df = 170) = .394; p = .69$ ). Finally, ABSISEQ is not significantly related to earnings judgments ( $t(df = 170) = -1.091; p = .28$ ), failing to confirm H5b.<sup>6</sup>

## SUMMARY, LIMITATIONS, AND DISCUSSION

This study examines the impact of graphical displays for non-GAAP earnings information on both professional and inexperienced investors' judgments. We constructed a simulated investor relations web site for a company whose non-GAAP, or pro forma earnings

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<sup>5</sup> We also conducted this analysis with PFTOTIDV, i.e., the amount of time spent examining all IDVs with pro forma content divided by the total amount of time spent examining all earnings-related IDVs. The PFTOTIDV covariate did not have a significant effect on earnings judgments.

<sup>6</sup> We also conducted the analysis with ISEQ as a covariate. Results were substantively the same as with ABSISEQ.

were greater than its GAAP earnings. Inexperienced participants who were provided with IDV displays containing pro forma earnings information made earnings judgments that were greater than those provided with GAAP only displays. This occurred regardless of whether participants received text information that contained GAAP earnings only or pro forma earnings reconciled to GAAP. We find a significant relationship between the proportion of time inexperienced participants spent looking at pro forma versus GAAP graphical IDVs and their earnings judgments. This relationship appears to explain the effects of pro forma graphical IDV content on these participants' judgments.

Analysis of information acquisition behavior showed that professional participants who were provided with graphical IDVs containing pro forma earnings information spent a greater proportion of time looking at pro forma versus GAAP displays of the same financial measures than did inexperienced individuals. However, professional participants' judgments were not affected by IDV display content.

We also found that earnings judgments made with GAAP only earnings information did not differ from those made with pro forma information reconciled to GAAP, regardless of participant type. This is consistent with Elliott's (2006) results for inexperienced investors. However, our result for professionals differs from Elliott (2006), who found that professional investors rated earnings higher when presented with a pro forma to GAAP earnings reconciliation than when presented with GAAP only earnings. While the effects of text earnings disclosure type were the same for inexperienced and professional investors, we found substantial differences across the two participant groups in information viewing behavior. Inexperienced investors presented with earnings information reconciled from pro forma to GAAP tended to spend relatively more time viewing the income statement relative to other web site components

than did those presented with GAAP only information. Professional investors spent proportionately less time viewing the income statement when it contained pro forma earnings reconciled to GAAP. At the same time, these investors spent relatively more time examining the earnings press release when the income statement presented pro forma earnings reconciled to GAAP.

Note that in this study, the press release and pro forma to GAAP earnings reconciliation both contain the same information concerning nonrecurring items. The only difference is format—the reconciliation contained this information in a table (See Figure 1), while the press release contained the information in narrative format (See Figure 5). Even though professionals reported a higher degree of familiarity with pro forma to GAAP earnings reconciliations than inexperienced investors, it is interesting to note that the inexperienced investors appear to have relied more on the reconciliations in making their judgments, while professionals relied on the press release narrative.

Insert Figure 5 about here.

One limitation of this study is that the sample size of professional investors (57) was substantially smaller than that for inexperienced investors (124). The lack of a significant IDV content effect for professionals could be due to limited statistical power. The observed difference in earnings judgments between the pro forma and GAAP only IDV conditions for professionals was 3.79 minus 3.52, or .27. If this is indeed a significant difference at the .05 level, the power of our statistical test to detect such a difference is only .14. However, a more reasonable standard might be to design the statistical test to detect a difference of .55 or greater, i.e., the same

difference as observed between the two IDV content conditions for inexperienced investors. Given the standard deviation of professional earnings judgments (1.17), the sample size necessary to detect a .55 difference with .50 power and an alpha level of .05 is 24 in each IDV content condition. Given that we had 29 professional participants in the GAAP only and 28 in the pro forma IDV content conditions, it appears that our professional sample size was adequate.

Another limitation of the study is that as undergraduate students, our inexperienced participants are likely to have less investment experience than the MBA students used as nonprofessional investor proxies in other judgment studies involving pro forma earnings (Elliott 2006, Frederickson and Miller 2004). Only 21, or 28.8% of the student participants reported experience trading securities on their own account. Thus, it remains an open question whether more experienced nonprofessional investors' judgments are affected by graphical displays of pro forma earnings information.

A final limitation of this study is that the majority of participants completed it in a lab setting. The lab setting may have affected participants' information search patterns. Our process data indicate that nearly all participants examined one or more financial statements. In contrast, Hodge and Pronk (2006) report that only 40.6 percent of inexperienced investors evaluating their company as a new investment and 54.5 percent of those who held it as a current investment examined one or more financial statements. Thus, the information acquisition behavior of our inexperienced participants may differ from that of actual nonprofessional investors.

Our results add to the existing body of research indicating that for inexperienced investors, investment-related judgments do not differ, regardless of whether earnings text disclosures are presented in GAAP only format or are presented as non-GAAP earnings reconciled to GAAP. We extend previous research by showing that while text disclosure of

reconciled non-GAAP earnings does not appear to affect earnings evaluations, it does have differential effects on the manner in which inexperienced and professional investors acquire financial information. Inexperienced investors presented with pro forma earnings reconciled to GAAP tend to spend relatively more time examining the earnings statement than those presented with GAAP earnings only. On the other hand, professional investors presented with reconciled pro forma earnings spent relatively less time examining the earnings statement and more time examining the press release, which gave details of the reconciling items. This suggests that even with the SEC reconciliation requirements, professional investors prefer to review a company's press release narrative to obtain information about reconciling items.

While the SEC now mandates reconciling text disclosure of pro forma earnings to GAAP, it does not regulate the presentation format of such disclosure. Also, the SEC provides no guidance regarding graphical displays of pro forma financial information. Our results suggest that such displays may affect inexperienced investors' judgments, even when text reconciliations of pro forma to GAAP earnings are present. Furthermore, firms that adopt XBRL for financial reporting purposes may elect to extend the standard taxonomy and create XBRL tags for their pro forma earnings information (Baldwin et al. 2006; SEC 2007). With these tags, investors may be able to view pro forma earnings information without the appropriate reconciling information required by Regulation G. Thus, SEC guidance or regulation regarding the display of pro forma earnings information in formats other than earnings press releases may be appropriate.

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**TABLE 1****Descriptive Statistics for Earnings Judgments****Panel A: Inexperienced Investors**

Text Disclosure Content		IDV Content		
		GAAP Only	Includes Pro Forma	Total
GAAP Only	Mean	4.78	5.10	4.94
	(N)	(32)	(30)	(62)
	(Std. Dev.)	(1.91)	(1.56)	(1.74)
Pro Forma Emphasis	Mean	4.48	5.26	4.87
	(N)	(31)	(31)	(62)
	(Std. Dev.)	(1.9)	(1.81)	(1.88)
Total	Mean	4.63	5.18	4.90
	(N)	(63)	(61)	(124)
	(Std. Dev.)	(1.89)	(1.68)	(1.81)

**Panel B: Experienced Investors**

Text Disclosure Content		IDV Content		
		GAAP Only	Includes Pro Forma	Total
GAAP Only	Mean	3.53	3.73	3.63
	(N)	(15)	(15)	(30)
	(Std. Dev.)	(.92)	(1.71)	(1.35)
Pro Forma Emphasis	Mean	3.50	3.85	3.67
	(N)	(14)	(13)	(27)
	(Std. Dev.)	(1.02)	(.9)	(.96)
Total	Mean	3.52	3.79	3.65
	(N)	(29)	(28)	(57)
	(Std. Dev.)	(.95)	(1.37)	(1.17)

TABLE 2

## Planned Comparison Results for Earnings Judgments

	Without Process Covariates		With Process Covariates	
	t (df=173)	p	t (df=170)	p
Inexperienced vs. professional	4.765	.001	1.454	.15
<b>Comparisons within Inexperienced Investors</b>				
Text Disclosure	-.236	.81	-.188	.85
IDV	1.854	.03 <sup>a</sup>	-.778	.78 <sup>a</sup>
Text Disclosure x IDV	.773	.44	.780	.44
<b>Comparisons within Professionals</b>				
Text Disclosure	.091	.93	.012	.99
IDV	.627	.53	-.058	.95
Text Disclosure x IDV	.168	.87	.146	.88
<b>Process Covariates</b>				
PFINCIDV: Inexperienced Investors <sup>b</sup>			1.685	.05 <sup>a</sup>
PFINCIDV: Professionals			.394	.69
ABSISEQ <sup>c</sup>			-1.091	.28

<sup>a</sup> One-tailed test. All other tests are two-tailed.

<sup>b</sup> PFINCIDV = time spent viewing IDVs containing pro forma net earnings information divided by the total time spent viewing IDVs containing net earnings information (both pro forma and GAAP)

<sup>c</sup> ABSISEQ = absolute value of ISEQ (item sequence variable).

**TABLE 3****Information Acquisition Data**

	<b>Time (in seconds)</b>		<b>Proportion of Total Time Spent</b>	
	<b>Inexperienced</b>	<b>Professional</b>	<b>Inexperienced</b>	<b>Professional</b>
	<b><u>Investors</u></b>	<b><u>Investors</u></b>	<b><u>Investors</u></b>	<b><u>Investors</u></b>
IDVs	123.97	130.34	0.188	0.153**
Press Release	191.64	241.16**	0.275	0.283
Income Statement	116.93	161.22**	0.164	0.189*
Balance Sheet	51.73	47.16	0.075	0.055**
Total Time	685.68	847.99**		

\* Professional and inexperienced investors means different:  $p < .10$

\*\*Professional and inexperienced investors means different:  $p < .01$

**FIGURE 1****Pro Forma Income Statements with Reconciliation****Income Statements**

DRUGS R US CORPORATION

**Consolidated Pro Forma Income Statements**

(Unaudited)

In millions, except per share amounts	13 Weeks Ended		52 Weeks Ended	
	December 29, 2004	December 30, 2003	December 29, 2004	December 30, 2003
Net sales	\$5,950.5	\$5,488.8	\$22,241.4	\$20,087.5
Cost of goods sold, buying and warehousing costs	4,537.4	4,060.3	16,544.7	14,725.8
Gross margin	1,413.1	1,428.5	5,696.7	5,361.7
Selling, general and administrative expenses	1,015.8	982.9	4,116.3	3,761.6
Depreciation and amortization	81.3	76.4	320.8	296.6
Total operating expenses	1,097.1	1,059.3	4,437.1	4,058.2
Operating profit before non-recurring items	316.0	369.2	1,259.6	1,303.5
Interest expense, net	14.1	20.1	61.0	79.3
Earnings before income tax provision	301.9	349.1	1,198.6	1,224.2
Income tax provision	113.7	139.6	467.0	489.7
Net (loss) earnings from recurring items (1)(2)	188.2	209.5	731.6	734.5
Diluted earnings per common share before non-recurring items (1)(2)	\$ 0.48	\$ 0.51	\$ 1.79	\$ 1.80
Weighted average diluted common shares outstanding	390.8	409.8	408.3	408.0
Dividends declared per common share	\$ 0.0575	\$ 0.0575	\$ 0.2300	\$ 0.2300

Figure continues on next page.

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**FIGURE 1**
**Pro Forma Income Statements with Reconciliation (continued)**
**Reconciliation of non-GAAP Items Required by SEC Rules**

A reconciliation of non-GAAP net income before recurring items with the Company's net income determined under GAAP is presented in the following table.

In millions, except per share amounts	13 Weeks Ended		52 Weeks Ended	
	December 29, 2004	December 30, 2003	December 29, 2004	December 30, 2003
Net earnings (loss) from recurring items	\$188.2	\$209.5	\$731.6	\$734.5
Non-recurring items net of tax benefit				
Restructuring and asset impairment costs (1)	318.4		318.4	
Partial payment of settlement proceeds in class action lawsuit (2)				(11.5)
Net earnings (loss) GAAP basis	\$(130.2)	\$209.5	\$413.2	\$746.0
Diluted earnings (loss) per common share before non-recurring items	\$ 0.48	\$ 0.51	\$ 1.79	\$ 1.80
Non-recurring costs (gains) net of tax benefit	0.82		0.78	(0.03)
Diluted earnings (loss) per common share after non-recurring items	\$ (0.34)	\$ 0.51	\$ 1.01	\$ 1.83
Weighted average diluted common shares outstanding	390.8	409.8	408.3	408.0
Dividends declared per common share	\$ 0.0575	\$ 0.0575	\$ 0.2300	\$ 0.2300

(1) During the fourth quarter of 2004, the Company recorded a \$489.0 million (\$318.4 million after-tax) charge for restructuring and asset impairment costs. The charge is comprised of \$5.7 million recorded in cost of goods sold and \$483.3 million recorded in total operating expenses. The total effect of the nonrecurring items has an impact on diluted earnings per share of \$0.81 in the fourth quarter and \$0.78 for the year.

(2) The 52 weeks ended December 30, 2003 include a \$19.2 million (\$11.5 million after-tax), or \$0.03 per diluted share, nonrecurring gain in total operating expenses representing partial payment of the Company's share of the settlement proceeds from a class action lawsuit against manufacturers of brand name prescription drugs.

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**FIGURE 2**
**Overview of Company Operations**
**IDVs Include Pro Forma and GAAP Information Condition**

## Investor Relations

Welcome to the Investor Relations website of Drugs R Us Corporation, offering you the latest financial information in an easy, user-friendly format. Celebrating more than 40 years of dynamic growth in the pharmacy retail industry, Drugs R Us Corporation is committed to customer satisfaction and to providing a positive shopping experience in our stores and on our web site.

Drugs R Us has created innovative approaches to serve the health care needs of all customers through nearly 4,200 stores, its online pharmacy, and its pharmacy benefit management and specialty pharmacy subsidiary. The pharmacy industry has some of the best long-term growth dynamics in all of retail, and Drugs R Us is extremely well positioned to seize further growth opportunities.

The Investor Relations website contains our latest earnings press release, most recent financial statements, and an interactive financial history. You may access these materials by clicking on the menu on the right hand side of each page. After you have viewed this information, click on **Enter Responses** to record your judgments.

**Overview**

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**Earnings Press Release**

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**Financial Statements**

Income Statements

Balance Sheets

Cash Flow Statements

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**Interactive Financial History**

**Income Statements**

Sales and Gross Margin

Operating Profit and Net Earnings (pro forma)

Operating Profit and Net Earnings (GAAP)

Diluted Earnings per Share (pro forma)

Diluted Earnings per Share (GAAP)

**Balance Sheets**

Current Assets and Current Liabilities

Current Assets by Account

Total Assets and Total Liabilities

Total Liabilities and Stockholders' Equity

**Cash Flows**

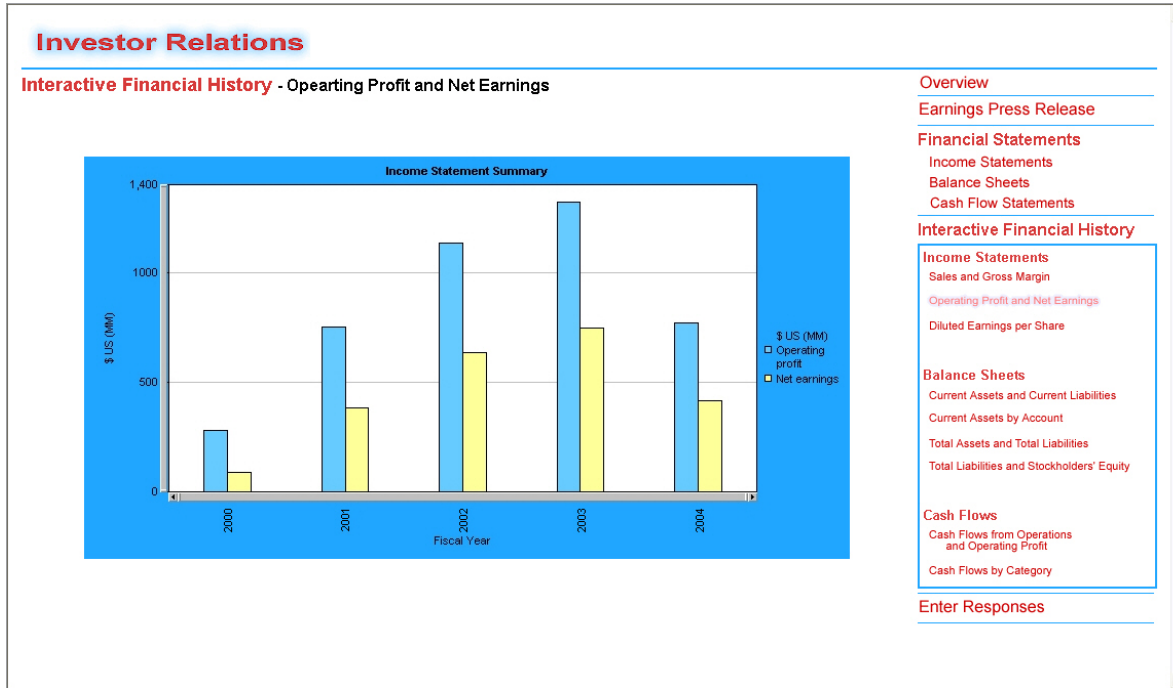
Cash Flows from Operations and Operating Profit (pro forma)

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FIGURE 3

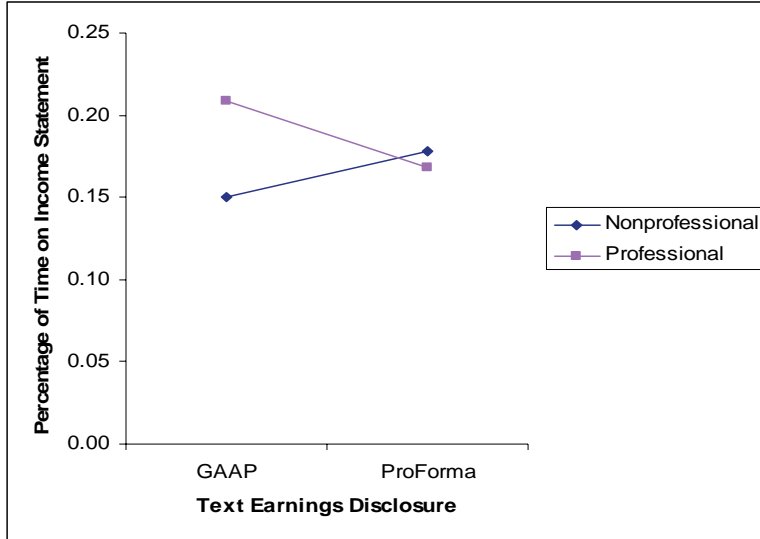
## Sample Interactive Data View

## IDV GAAP Information Only Condition

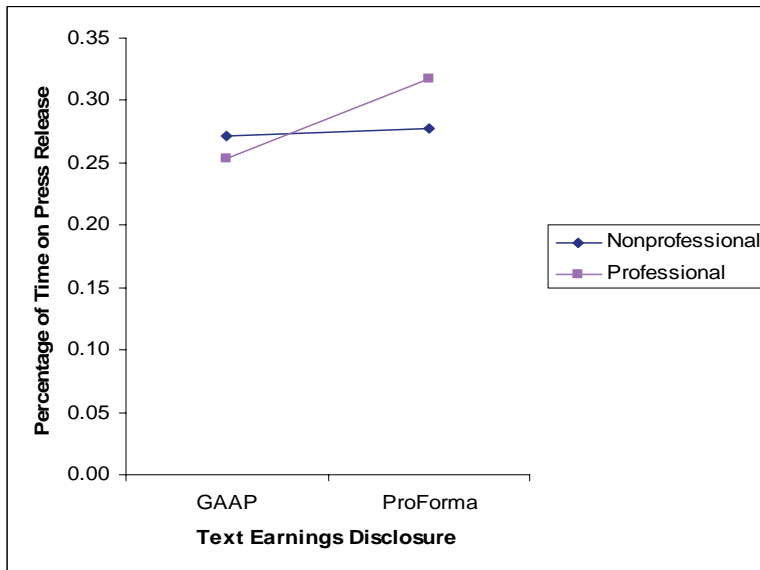


**FIGURE 4**  
**Participant Type by IDV Content Interactions:**  
**Information Acquisition Data**

**Panel A: Proportion of Time Examining Income Statement**



**Panel B: Proportion of Time Examining Press Release**



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**FIGURE 5****Press Release Excerpt: Non-Recurring Items Disclosure****Non-Recurring Items**

During the fourth quarter of 2006, the Company recorded a \$489.0 million (\$318.4 million after-tax) nonrecurring charge for restructuring and asset impairment costs associated with a comprehensive plan designed to streamline operations and enhance operating efficiencies. The major components of the plan are as follows:

- Closing 229 stores;
- Closing the Columbus, Ohio mail order facility;
- Closing the Henderson, North Carolina distribution center;
- Closing two satellite office facilities; and
- Staff reductions related to these closings and other streamlining initiatives.

2005 results benefited from a \$19.2 million (\$11.5 million after-tax) nonrecurring gain from settlement proceeds received in the third quarter from a class action lawsuit against certain manufacturers of brand name prescription drugs.

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