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Magnitude Statements in Abstracts: A Content Analysis and Evaluation of Information Clarity[1]

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Abstract

This paper is an analysis of information density within abstracts from the top Economics, Political Science, Chemistry, and Medicine journals to test the hypothesis that a more information dense abstract is a better abstract (in terms of clarity). Several criteria are developed to gauge the level of information density (the amount of quantitative information rather than length) within these abstracts and to assess differences between them. These criteria are: the number of findings, the number of quantitative magnitude claims, the number of quantitative magnitude claims with standard errors, the number of qualitative magnitude claims, the number of non-magnitude claims, and the number of ambiguous non-magnitude claims. After differences between these criteria are described, the criteria are applied to test for effects on the number of citations received for each discipline, by paper type (empirical, theoretical, mixed, and experimental) and by discipline. The effects on the number of citations received suggest specific recommendations for abstract construction by paper type and by discipline to directly influence increases in the expected number of citations received. The implications of these recommendations are then discussed and evaluated.*

* This abstract is constructed in a way that coincides with the analysis herein.

Introduction

Abstract composition is a topic of interest across disciplines, but is rarely considered through the lens of the lay-reader (one who does not have extensive training in the discipline read). In order to understand the effects on the lay-reader, we first need to examine the type of information displayed within abstracts that would lead to opinion formation: quantitative information. Quantitative information is conceivably one of the most pervasive entities in academia, showing itself in any instance that merits proving. To measure the level of quantitative information within the abstracts chosen, multiple criteria are developed to deconstruct each abstract into its individual parts. These criteria then assist in making claims about which disciplines are more beneficial to the lay-reader in terms of information clarity.

The original hypothesis guiding this paper is that a “more information dense abstract is a better abstract”. This specifically refers to the inclusion of quantitative information that adds, and does not detract, from the understanding of the lay-reader. While the hypothesis favors the lay-reader, the authors may have different motivations for abstract writing. These motivations are explored through the incentive structure provided by citations. The ideal case is that authors are incentivized to include the more clear indicators of quantitative information in their abstracts by receiving more citations on average as a reward. This, however, does not hold for all disciplines, and is ultimately observed as a mixed bag of incentives that benefits the lay-reader in some cases and harms his/her understanding potential in other cases.

This paper proceeds by examining the pure differences in quantitative information presented within Economics, Political Science, Chemistry, and Medicine abstracts in groups of social science (Economics and Political Science) and science (Chemistry and Medicine). Then, these effects are partitioned into their individual parts to capture the disciplines that drive the effects shown by the social science versus science analysis. These effects are introduced to authors' incentives and shown to affect the number of citations received. The incentives are then elaborated in a case study format, rendering concrete suggestions for the maximization of citations. These incentives are then evaluated for their indirect effects on the lay-reader: whether or not they incentivize authors to write abstracts in a way that promotes information clarity for the lay-reader.

Background

The abstract, while nominally intended to succinctly summarize an article of research, is more often practically intended to encourage readership of the relevant article. This practical bias can result in the publishing of misleading abstracts[2] that do not accurately represent the contents of the relevant article – which can be especially harmful as some readers "increasingly rely upon abstracts as a substitute for reading the full article."[3] The importance of maintaining unbiased, high-quality abstracts is fueling growing research interest in abstract analysis regarding abstract content, clarity, and accuracy.

Prior to the late 1980s, very little research literature existed on the topic of abstract analysis regarding content and structure. Beginning in the late 1980s, however, a movement began within the medical community to standardize abstract structures, primarily so that health professionals may more easily select clinically relevant and

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[2] Harris, A., Standard, S., Brunning, J. et al. 2002. "The Accuracy of Abstracts in Psychology Journals." *The Journal of Psychology: Interdisciplinary and Applied,* 136(2), 141-148.
[3] McCoul, E.D., Vengerovich, G., Burstein, D.H. et al. 2010. "Do abstracts in otolaryngology journals report study findings accurately?" *Otolaryngology--head and neck surgery : official journal of American Academy of Otolaryngology-Head and Neck Surgery,* 142(2), 225-230.

methodologically valid research articles.[4] A structured-abstract format was introduced by *Annals of Internal Medicine* in 1987 (see “Table 1” below), and subsequent studies comparing unstructured medical abstracts to structured medical abstracts found structured abstracts to be: (1) more informative[5,6], (2) more accurate[7], (3) generally welcomed by readers and authors[8], (4) facilitative to peer review[9,10], and (5) easier to search through and read[11]. Unsurprisingly, other disciplines – namely, non-medical sciences and social sciences – have called for the adoption of similar abstract structures for their journals.[12,13,14]

However, simply introducing a structure to abstracts is not enough to combat the common deficiencies of abstracts. Structured abstracts still sometimes omit important information[15,16], and this calls for closer attention to be paid to the number and nature of magnitude statements in abstracts. Very little research literature exists on the topic of quantitative information in abstracts (and its effects on abstract clarity); in fact, the most

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[4] Harbourt, A.M., Knecht, L.S. & Humphreys, B.L. 1995. “Structured abstracts in MEDLINE, 1989-1991.” *Bulletin of the Medical Library Association,* 83(2), 190-195.
[5] Taddio, A., Pain, T., Fassos, F. F. et al. 1994. Quality of nonstructured and structured abstracts of original research articles in the *British Medical Journal,* the *Canadian Medical Association Journal* and the *Journal of the American Medical Association*. *Canadian Medical Association Journal,* 150(10), 1611-1615.
[6] McIntosh, N. “Structured abstracts and information transfer.” *R&D Report No. 6142*. Boston Spa: British Library, 1995.
[7] Harbourt, A.M., Knecht, L.S. & Humphreys, B.L. Ibid.
[8] Haynes, R. B. 1993. “More informative abstracts: current status and evaluation.” *Journal of Clinical Edpidemiology,* 46(7), 595-597.
[9] McIntosh, N. Ibid.
[10] Haynes, R. B., Mulrow, C. D., Huth, E. J. et al. 1990. More informative abstracts revisited. *Annals of Internal Medicine,* 113(1), 69-76.
[11] Hartley, J. 1998. “Is it appropriate to use structured abstracts in non-medical science journals?” *Journal of Information Science,* 24(5), 359-364.
[12] Ibid.
[13] Hartley, J. 1997. “Is it Appropriate to Use Structured Abstracts in Social Science Journals?” *Learned Publishing,* 10(4), 313-317.
[14] Hartley, J. 2003. “Improving the Clarity of Journal Abstracts in Psychology.” *Science Communication,* 24(3), 366-379.
[15] Froom, P. & Froom, J. 1993. “Deficiencies in structured medical abstracts.” *Journal of Clinical Epidemiology,* 46(7), 591-594.
[16] Can, O.S., Yilmaz, A.A., Hasdogon, M. et al. 2011. “Has the quality of abstracts for randomised controlled trials improved since the release of Consolidated Standards of Reporting Trial guideline for abstract reporting? A survey of four high-profile anaesthesia journals.” *European journal of anaesthesiology,* 28(7), 485-492.

closely-related study has to do with examining how statistical methods are presented in high-impact clinical research articles.[17] This paper, therefore, aims to rectify the situation and provide a detailed analysis of how the inclusion of quantitative information can affect both the readability of the abstract on the part of the lay-reader as well as the publishability of the abstract and article on the part of the author. Moreover, this paper will also broaden the scope of discussion beyond medical research and investigate impacts across four different disciplines: Economics, Political Science, Chemistry, and Medicine.

Table 1
Formats for structured abstracts for original research studies and review articles

Original research studies
1. Objective: the exact question(s) addressed by the article
2. Design: the basic design of the study
3. Setting: the location and level of clinical care
4. Patients or participants: the manner of selection and number of patients or participants who entered and completed the study
5. Interventions: the exact treatment or intervention, if any
6. Main outcome measures: the primary study outcome measure as planned before data collection began
7. Results: the key findings
8. Conclusions: key conclusions, including direct clinical applications

Review articles
1. Purpose: the primary objective of the review article
2. Data sources: a succinct summary of data sources
3. Study selection: the number of studies selected for review and how they were selected
4. Data extraction: rules for abstracting data and how they were applied
5. Results of data synthesis: the methods of data synthesis and key results
6. Conclusion: key conclusions, including potential applications and research needs

[17] Taback, N. & Krzyzanowska, M.K. 2008. "A survey of abstracts of high-impact clinical journals indicated most statistical methods presented are summary statistics." *Journal of clinical epidemiology,* 61(3), 277-281.

Methodology

Using a top journal from each discipline allowed for the extraction of 250 of the most recent abstracts from the "Web of Science" database (accessed early January, 2012): the American Economic Review for Economics, the American Political Science Review for Political Science, the Journal of the American Chemical Society for Chemistry, and the New England Journal of Medicine for Medicine.

These abstracts were then sorted by paper type: empirical, theoretical, experimental, and mixed (any combination of the other three) to account for differences between these types and differences between these types by discipline (social science and science and individual disciplines) in the analysis.

The criteria developed to assess information density (the amount of quantitative information included rather than the length of the abstract) within the abstracts are: the number of findings, the number of quantitative magnitude claims, the number of quantitative magnitude claims with associated standard errors, the number of qualitative magnitude claims, the number of non-magnitude claims, and the number of ambiguous non-magnitude claims. These criteria will be sparingly referred to (starting with the number of quantitative magnitude claims) as "MQuant", "MQuantSE", "MQual", "NoM", and "NoMamb", respectively.

The number of findings is qualified as the number of findings that would, in principle, have magnitude claims associated with it. The number of quantitative magnitude claims ("MQuant") is defined as claims that feature numerical magnitudes, but do not have associated standard errors mentioned. A quantitative magnitude claim in Chemistry, for example, might be "the chemical rendered .221 mols". The number of quantitative magnitude claims with standard errors (“MQuantSE”) follows a similar path as “MQuant” but includes standard errors with its numerical estimates. A quantitative magnitude claim with a standard error in Economics might be “a 1% decrease in unemployment lead to a 3.153% ± .04% increase in GDP”. The number of qualitative magnitude claims (“MQual”) captures an effect without the use of numerical estimates, such as “X is much larger than Y” or “an increase in X increases Y exponentially”. Similarly, this could be seen, for example, within Political Science as “a change in party affiliation from Democrat to Republican slightly increases the number of votes cast in a presidential election year”. The number of non-magnitude claims (“NoM”) is a measure for instances when a magnitude claim would be applicable, but there is not one present. For example, a Medicine paper that had a finding of “the surgery inadvertently improved the patient’s blood sugar level” indicates that there is an effect, but it is neither quantified nor qualified by a qualitative statement. The number of ambiguous non-magnitude claims (“NoMamb”) is defined as the number of instances where a lay-reader (someone who is not specially trained within the given discipline) might misinterpret a non-magnitude claim as a magnitude claim. For example “X has a significant effect on Y” can be misinterpreted within an empirical or experimental paper as a substantial effect of X on Y (a magnitude statement), rather than the presumably statistically significant effect stated. In another sense, “no significant effect” may be misinterpreted as a precise estimate of a very small effect (again, a magnitude statement), rather than the probable statistical claim that the standard error of the coefficient is more than half of the estimated coefficient (simply a statement of imprecision, which in turn is not a magnitude statement). These criteria are assessed for each of the one thousand abstracts, and then used to determine differences between disciplines.

To see whether the hypothesis “a more information dense abstract is a better abstract” applies to researchers in a personally significant way data was gathered on the number of citations received for each abstract from the “Web of Science” database. In order to replicate an extraction of these citations successfully, one needs to implement the “grep” command within the computer’s system terminal and transfer the results accordingly. Regressions were then run in “STATA 10” while fixing the number of citations as the dependent variable, and the previously mentioned criteria, dummy variables for each discipline, and dummy variables for paper type as independent explanatory variables.

Field versus Type

One might expect, generally, a difference between a social scientific approach and a scientific approach to a problem. Where social science may focus on the social ramifications of an issue, science may lean toward a more quantifiable argument that houses its own implications. The following analysis highlights the differences between these two fields, showing statistically significant differences in the number of findings, quantitative claims, quantitative claims with standard errors, qualitative claims, claims that have no magnitude where there ought to be one, and “spin” – claims that can be perceived as quantitative claims where there are not any.

Findings

A simple mean analysis of the abstracts used shows that science places more findings in its abstracts: where science has an average of 4.938 ± .164 findings per abstract, social sciences has an average of 2.302 ± .071 findings per abstract for a very statistically significant difference of 2.636 ± .179 findings per abstract. Since the difference holds for all levels of significance, we can predict that scientific abstracts will always have more findings than social scientific abstracts. This suggests that scientific abstracts tend to contain more observations and discoveries on average. This, however, does not suggest that scientific abstracts are more informative since the number of findings can still be influenced by instances where no magnitude claims are presented.

Inclusion of a few interactions highlights some differences brought about by paper type. Empirical papers create the smallest difference between themselves and science papers with a change of -2.250 ± .193 findings compared to a -2.560 ± .270, -2.763 ± .261, and -3.067 ± .203 change from experimental, mixed and theoretical paper types respectively. All of these results hold for all levels of statistical significance. Nonetheless, science abstracts hold a higher proportion of findings on average as compared to social science abstracts for all significance levels despite the relative differences in magnitude between the types of the abstracts.

"MQuant"

The number of quantitative claims serves as an initial measure for the information density found within the abstracts. A larger number of quantitative claims therefore suggest that an abstract is more informative.

The mean social science quantitative magnitude claims from the sample is .26 ± .029, while the mean for sciences is 2.646 ± .1443 quantitative claims. The data confirms that a very statistically significant difference exists between sciences and social sciences, with sciences having more quantitative magnitude claims than social sciences at all significance levels. The empirical coefficient for social sciences shows that these abstracts will have 2.386 ± .147 fewer quantitative claims.

Differences by type for the number of quantitative magnitude claims amount to a substantial level between social science and science abstracts. Theoretical social science abstracts change the average number of quantitative magnitude claims the most compared to other paper types by -2.648 ± .147 claims. Experimental, mixed, and empirical types generate -2.446 ± .166, -2.371 ± .172, and -2.234 ± .154 claims respectively. An F-test reveals that empirical, experimental, mixed, and theoretical types taken together do not differ statistically from each other in terms of magnitude for all significance levels. Despite the similarity in magnitudes between the paper types, the claim holds that science abstracts have a larger amount of quantitative magnitude claims on average.

"MQuantSE"

The inclusion of a measure for standard errors approaches the heart of the issue for writing an informative abstract. While some standard errors are disproportionately large and others quite small, the exclusion of any standard errors limits the ability to make accurate judgments concerning the strength of magnitude claims. As such, this measure is included to determine which fields allow for a more precise initial reading of the magnitude claims associated with a finding.

The mean for social sciences is very low, at .004 ± .004 standard errors. The confidence interval of (-.0039, .0119) suggests that the number is not different from zero, and the data shows that there are indeed very few mentions of standard errors within the social science disciplines. On the other hand, sciences have a mean of .828 ± .080, showing a much higher occurrence of standard errors. Though this claim generalizes to both Chemistry and Medicine disciplines, we will later see that this magnitude is primarily the result of standard errors found in Medicine abstracts. The empirical coefficient for the difference between science and social science is -.824 ± .080, which holds for all significance levels. Thus, sciences always have more standard errors associated with "their" magnitude claims, lending to the assertion that science abstracts tend to be more informative than social science abstracts. Thus, scientific abstracts feature a larger bias toward precision.

Differences attributed to type are very similar. The empirical coefficients for empirical, theoretical, mixed and experimental social science paper types are -.819 ± .080, -.828 ± .080, -.828 ± .080, and -828 ± .080 claims, respectively. These numbers are very similar, however, because the mixed, theoretical, and experimental paper types feature no quantitative claims with standard errors in the collected data. Therefore, the only valid coefficient is that of the empirical paper type. This finding makes sense because of the very low incidence of quantitative claims with standard errors in both the paper types and the social sciences. The difference between disciplines when accounting for type remains as a similar .819 ± .080 fewer claims for empirical social science abstracts on average.

"MQual"

The number of qualitative magnitude statements indicates a step back from information density. An associated finding is qualified by a qualitative measure, such as "large" or "small". Though these statements give a better idea about the scope of the finding, they lack the precision associated with numerical claims. These claims also limit the ability for lay-readers to make proper inferences about the data, since a qualitative claim might be interpreted differently depending on the background one has on the topic.

Once again, scientific abstracts hold a majority of the magnitude claims: while science has a mean of .626 ± .046, social science has a mean of .334 ± .029. The empirical coefficient for social sciences highlights a very statistically significant difference of .292 ± .054 qualitative magnitude claims that holds for all significance levels. This shows that social sciences, on average, always have a smaller amount of qualitative magnitude claims. Following the criteria aforementioned, this information furthers the claim that scientific abstracts are, on average, denser than social science abstracts.

The number of qualitative magnitude claims is affected by type. The empirical coefficients for empirical, theoretical, mixed, and experimental are -.174 ± .067, -.394 ± .060, -.401 ± .095, and -.337 ± .108, respectively. Though these coefficients show that empirical is the type that features the smallest difference compared to science abstracts, an F-test reveals that all of these coefficients are not different from each other in magnitude on average (p-value: .35%). As inferred from previous claims, science trumps social science in the amount of qualitative claims.

"NoM"

Holding type constant, the mean number of "no magnitude claims" is 1.632 ± .062 for social sciences and .726 ± .050 for sciences, leading to a difference of .906 ± .080 more claims for social sciences. This might initially seem to turn around the losing streak in information density for social sciences, but it only reinforces the lack thereof. The nature of the no magnitude claims measure is to show instances where there should be magnitude claims but there are none presented. We see a higher average frequency of such instances in social sciences, implying that the information density is even lower on average because of the exclusion of quantitative information.

The difference between social science and science abstracts in this case is not driven by the discipline (and is instead, driven by type), since the collective magnitudes of isolated disciplines effectively cancel each other out: .726 ± .050 for sciences and -.726 ± .050 for social sciences. The empirical coefficients for empirical, theoretical, mixed, and experimental papers are .984 ± .103, .805 ± .119, .874 ± .190, and .985 ± .221, respectively. Though these coefficients seem similar, they are not statistically the same in magnitude. This leads to the conclusion that experimental social science papers have the most of these claims on average, followed by empirical, mixed, and theoretical, social science papers, respectively.

"NoMamb"

Despite the common trend of science having more information density than social science, this criterion points us in the other direction, where science abstracts have a higher average rate of instances that may cause a reader to misinterpret a non-magnitude statement as one of a certain magnitude.

The mean for social sciences is .072 ± .131, while the mean for sciences is .112 ± .017. The difference between social sciences and science is -.04 ± .021 fewer findings for social sciences on average. This number is not necessarily an indication of the amount of information density as much as it is as an indicator for precision. Though this is not the same form of misinformation that an absence of a quantitative claim would provide, for example, it still causes improper inferences and is therefore important to consider.

There are some notable differences brought about by paper type. The empirical coefficients for empirical, theoretical, mixed, and experimental social science paper types are -.008 ± .029, -.102 ± .020, -.037 ± .045, and .066 ± .067, respectively. The coefficient for empirical, mixed, and experimental paper types, however, are not statistically significant (p-values: 78.3%, 41.1%, and 32.9% respectively), while the mixed coefficient is statistically significant for all significance levels. F-tests reveal that these coefficients are different from each other, but when taken together, are always not any different from zero. The coefficient for theoretical paper types is especially notable because it is not statistically different from zero for all levels of significance while it remains the only statistically significant coefficient. The low R-squared of 1.65% and the not statistically significant paper types, however, leave these results as questionable. Much of the unexplained sum of squares is likely produced from the low incidence of this type of claim. Since we cannot say that empirical, mixed, and experimental paper type coefficients produce any statistically significant effect on the number of “NoMamb” claims, and the coefficient of theoretical paper type is not statistically different from zero, the variation in “NoMamb” claims must be explained by the difference between social science and science rather than by paper type.

Discipline versus Type

A general approach to social science and science fields reveals that science abstracts hold a higher level of information density for a majority of the criteria (with exception to “NoMamb” which carries little weight due to its not statistically significant coefficients and low R-squared).

This section describes the differences brought about by the more specific effects of discipline (Economics, Political Science, Chemistry, and Medicine) and paper types on the information density criteria that we have seen. It will provide a more tangible basis for the applicability of the descriptive analysis within these disciplines.

Findings

The mean number of findings for Economics, Political Science, Chemistry, and Medicine are 2.596 ± .084, 2.008 ± .111, 3.156 ± .160, and 6.72 ± .239, respectively. This range is similar to the differences shown in social science and science abstracts taken together. We can see now that the difference was driven by the large average of findings within the Medicine abstracts. Once again, we need to be careful about the conclusion that medicine has the most information density. Since the "NoM" and "NoMamb" criteria exist, we need to measure their effects before making that statement absolutely.

Regressing for the effects of the individual disciplines on "Findings" reveals the differences between disciplines when compared to Medicine as -3.564 ± .287, -4.712 ± .263, and -4.124 ± .253 for Chemistry, Political Science, and Economics, respectively for all significance levels. An F-test shows that these differences are always different from each other. We can conclude that Medicine holds the highest number of findings, followed by Chemistry, Economics, and Political Science, respectively.

Using experimental paper type as a constant, there are observable differences found for the effect of each type on the number of findings. Compared to the experimental coefficient of 4.73 ± .155, empirical, theoretical, and mixed coefficients are -2.039 ± .184, -2.855 ± .195, and -2.552 ± .255, respectively for all levels of statistical significance. Though this might seem a bit intuitive, we need to recognize that the experimental coefficient is largely influenced by Chemistry and Medicine disciplines. Effectively this regression becomes a comparison between social sciences and sciences, as empirical, theoretical, and mixed paper types are only found within the social sciences.

F-tests reveal that these coefficients are always different from each other, and are always different from zero collectively. The theoretical and mixed paper type coefficients, however, are not statistically different from each other in magnitude (p-value: 19.72%).

Regressing Economics, Political Science, Chemistry, empirical, theoretical and mixed paper types on Findings while holding experimental Medicine papers constant renders expected results. The empirical, theoretical, and mixed coefficients are all not statistically significant, which follows given that these types are compared solely to the Medicine discipline (since all of the abstracts in Medicine are experimental). Economics and Political Science have slightly different coefficients from the previous regression because of the differences espoused by experimental paper type. The Economics coefficient is -4.173 ± .324, while the Political Science coefficient is -4.680 ± .353. The Chemistry coefficient is the same, reinforcing that the variation from the Economics and Political Science coefficients comes from the experimental paper type.

To determine how much of the variation in Economics and Political Science is determined by the experimental paper type the regression is transformed into one with the following independent variables: Economics, Political Science, Chemistry, an interaction between Economics and experimental paper type, and an interaction between Political Science and experimental paper type. With Medicine as a constant, experimental Economics papers offer an additional -.45 ± .202 statistically significant findings (p-value: 2.6%). Though the experimental Political Science paper shows a difference of .772 ± .534 findings, it lacks validity in statistical significance (p-value: 14.9%). While Political Science is virtually unaffected by the experimental paper type, Economics shows a small difference when accounted for its experimental papers.

Holding Political Science constant in comparison to Economics, empirical, theoretical, experimental paper types, and interactions between Economics and these types, leaves very few statistically significant effects on the number of findings. In fact, the only statistically significant effect occurs at the 10% level for the theoretical paper type with a p-value of 6.5% and a coefficient of -.584 ± .315 findings. We can conclude that Political Science and Economics neither vary significantly by type nor by discipline.

"MQuant"

The mean number of quantitative magnitude claims for Economics, Political Science, Chemistry and Medicine are .368 ± .049, .152 ± .028, 1.452 ± .116, and 3.84 ± .242, respectively. As made feasible by the largest number of findings, Medicine holds the largest number of quantitative magnitude claims by a sizeable margin. As an initial claim, Medicine is a viable candidate for the most information dense discipline. As compared to the mean differences we saw (2.386 ± .147 quantitative magnitude claims) between social sciences and sciences, Medicine is shown to drive that relationship. The probability that a given finding has a quantitative magnitude claim associated with it is 14.176% ± 1.369%, 7.570% ± 1.181%, 46.008% ± 1.774%, and 57.143% ± 1.207% for Economics, Political Science, Chemistry, and Medicine respectively. We see these probabilities manifest themselves in the means.

Regressing the disciplines on the number of quantitative magnitude claims establishes the isolated effects of the disciplines. Compared to the constant for Medicine of 3.84 ± .242, the empirical coefficients for Economics, Political Science and Chemistry are -3.472 ± .247, -3.688 ± .243, and -2.388 ± .268, respectively. F-tests show that these numbers are always different from zero. Despite the similarity between the Economics and Political Science coefficients, these coefficients are different from each other 99.9% of the time, confirming the magnitude of the generated differences with respect to Medicine.

To look for isolated effects by paper type, each paper type was regressed on the number of quantitative magnitude claims with respect to the experimental paper type. The experimental paper type generates a constant of 2.444 ± .136, while empirical, theoretical, and mixed coefficients are -2.032 ± .146, -2.346 ± .138, and -2.169 ± .165, respectively. The coefficients are collectively different from zero, but the empirical and mixed coefficients are not statistically different from each other (p-value: 20.68%). Similarly, the theoretical and mixed coefficients are not different from each other but for 6.87% of the time. These results are not too surprising because the constant is essentially equivalent to regressing relative to sciences (since Chemistry and Medicine are solely experimental). Thus, we see a breakdown similar to that between social sciences and sciences.

Relative to an experimental Medicine paper, disciplines and paper types generate similar coefficients on their effects on the number of quantitative magnitude claims. The coefficients for Economics, Political Science, Chemistry, and empirical, theoretical, and mixed paper types are -3.576 ± .257, -3.769 ± .257, -2.388 ± .269, .233 ± .099, -.056 ± .087, and .136 ± .125, respectively. All of the disciplines are statistically significant for all significance levels, while theoretical and mixed coefficients are not statistically significant (p-values: 52.1% and 27.7% respectively). The only unexpected result is the positive statistically significant coefficient for empirical paper type (p-value: 1.9%), suggesting that empirical papers have a slightly higher average effect on the number of quantitative magnitude claims than do the effect of Medicine papers.

To parse out the variation brought about by experimental paper type, interactions were included between Economics and experimental paper type, and Political Science and experimental paper type. The empirical coefficients for these interactions relative to Medicine are -.191 ± .122 and .051 ± .108, respectively. These coefficients, however, are not statistically significant (p-values: 11.9% and 63.6% respectively), confirming that the differences between Medicine and Economics, and Medicine and Political Science are brought about by differences in discipline rather than experimental paper type.

To determine if there are any differences between Economics and Political Science by paper type, Economics, empirical, theoretical, and experimental paper type, and interactions between Economics and these types are regressed on the number of quantitative magnitude claims. Interestingly, none of the coefficients are statistically significant. This shows that there is neither a difference between Political Science and Economics by discipline, nor by paper type. Effectively, this means that the social sciences move together.

"MQuantSE"

The mean number of quantitative claims with standard errors for Economics, Political Science, Chemistry, and Medicine are .008 ± .008, 0, 0, and 1.656 ± .141, respectively. Medicine has a much higher amount of quantitative claims with standard errors as compared to the other disciplines, though Chemistry and Medicine have zero of such claims. The mean quoted for sciences (828 ± .080) is exactly half the amount quoted for Medicine, showing that the former mean is driven solely by Medicine and was only driven downward by the lack of quantitative magnitude claims with standard errors within Chemistry. The probability that a given finding has a quantitative magnitude claim with standard errors associated with it is .31% ± .22%, 0% ± 0%, 0% ± 0%, and 24.643% ± 1.051% for Economics, Political Science, Chemistry, and Medicine, respectively.

The effects of Economics, Chemistry, and Political Science relative to Medicine on the number of quantitative claims with standard errors are -1.648 ± .141, -1.656 ± .141, and -1.656 ± .141, respectively (the constant is 1.656 ± .141). Normally, we would not expect Chemistry to render similar results to the social sciences (Economics and Political Science), but the absence of any quantitative claims with standard errors in Chemistry combined with the same absence in Political Science and the low level of such claims in Economics make these results reasonable. F-tests show that these coefficients are always statistically different from zero when taken together, but their magnitudes are not statistically different from one another (p-value: 31.76%). Since Chemistry and Political Science both have zero quantitative magnitude claims with standard errors, this suggests that the Economics coefficient is similarly not different from zero. It is confirmed, then, that Medicine is the only discipline that houses any statistically significant amount of quantitative claims with standard errors.

The effects of empirical, theoretical, and mixed paper types relative to experimental paper type on the number of quantitative magnitude claims with standard errors are -.751 ± .074, -.760 ± .074, and -.760 ± .074, respectively. The empirical coefficient for the constant (experimental paper type) was .760 ± .074. These results are none too surprising given the results shown in the previous paragraph. Though the coefficient for the empirical paper type is different from the theoretical and mixed paper types, an F-test shows that it is not statistically different in magnitude from the two types (p-value: 31.74%). Thus, the empirical coefficient effectively realizes a zero effect on the number of quantitative magnitude claims with standard errors in the same manner as theoretical and mixed paper types. Since the experimental paper type is primarily measuring Chemistry and Medicine disciplines, and we know that Chemistry's effect is zero, we can confirm that these results are sound.

Testing Economics, Political Science, and Chemistry disciplines, empirical, theoretical and mixed paper types relative to experimental Medicine papers renders very similar results with disciplines cancelling out any effect on the number of quantitative magnitude claims with standard errors (effectively an effect of zero), and no statistically significant effects from the paper types. To see whether experimental paper type has a different effect on Economics and Political Science disciplines, interactions between Economics and experimental paper type and Political Science and experimental paper type were included. The resulting regression rendered a coefficient with no statistical significance for the Economics interaction (p-value: 31.8%), while the Political Science interaction coefficient is 2.17e^-14 ± 5.13e^-15. An F-test shows that Economics and Political Science interactions are not different from each other in magnitude (p-value: 31.79%), suggesting that there is no variation by experimental type. Once again, this confirms that Medicine features the only statistically significant effect on the number of quantitative magnitude claims with standard errors.

To determine if there are any differences between Economics and Political Science by paper type, interactions between Economics and empirical theoretical, and experimental paper types are regressed on the number of quantitative magnitude claims. Reminiscent of the previous section, none of the coefficients are statistically significant.

This suggests that there is neither a difference between Political Science and Economics by discipline, nor by paper type. Effectively, this means that the social sciences move together. And since we have confirmed that these disciplines have virtually no effect on the number of quantitative magnitude claims with standard errors, this trend is quite meaningless.

"MQual"

The mean number of qualitative magnitude claims for Economics, Political Science, Chemistry, and Medicine are .352 ± .041, .316 ± .040, .924 ± .078, and .328 ± .040, respectively. Unlike most other comparisons, Chemistry holds the highest average amount of the magnitude claim in question. Also unlike most other comparisons, Chemistry drives the empirical coefficient we saw earlier for the effect of science on the number of qualitative magnitude claims. The probability that a given finding has a qualitative magnitude claim associated with it is 13.559% ± 1.344%, 15.737% ± 1.625%, 29.278% ± 1.620%, and 4.881% ± .53% for Economics, Political Science, Chemistry and Medicine, respectively. These probabilities are not predictive of the observed means, as the Political Science probability outweighs the Economics probability, but features a lower mean. Similarly, the observed mean for Medicine is comparable to that of Political Science, but has a much smaller probability.

Relative to Medicine (.328 ± .040), Economics, Chemistry, and Political Science have an average effect on the number of qualitative magnitude claims of .024 ± .057, .596 ± .088, and -.012 ± .057, respectively. The empirical coefficients for Economics and Political Science, however, are not statistically significant (p-value: 67.5% and 83.3% respectively), effectively having an effect no different from the magnitude associated with Medicine. Chemistry, however, holds for all levels of statistical significance, solidifying that its average effect is larger than Medicine's average effect.

The average effects of mixed, theoretical, and empirical paper types on the number of qualitative magnitude claims (relative to the experimental paper type constant: .598 ± .043), are -.373 ± .093, -.366 ± .057, and -.146 ± .065, respectively. While these coefficients are all statistically significant, an F-test confirms that the mixed and theoretical paper types are not statistically different in magnitude (p-value: 93.93%). Since the constant is made up of the entire Chemistry and Medicine disciplines, we anticipate that these effects are similar to a comparison between social sciences and sciences. Further, we would also expect Chemistry to form a larger portion of the constant than Medicine.

Relative to experimental Medicine papers, Economics, Political Science, and Chemistry disciplines, and empirical, theoretical, and mixed paper types produce similar coefficients to those seen before. Everything, however, is not statistically significant except for the Chemistry coefficient of .596 ± .088. This confirms that there is no difference between the estimated effects of Medicine, Economics, and Political Science disciplines, holding paper type constant. Chemistry is thus left to maintain a magnitude higher than Economics, Political Science, and Medicine disciplines. Inclusion of interactions with Economics and Political Science disciplines with experimental paper type show that Political Science does not have a statistically significant difference by experimental paper type while the Economics interaction varies at a 10% significance level (p-value: 7.9%) with a coefficient of -.173 ± .098. This qualifies the difference brought about by paper type, with experimental Economics papers having the only differentiating coefficient.

Finally, there is only one identifiable difference between Economics and Political Science by paper type. Holding Political Science constant with a coefficient of .307 ± .120, interactions between Economics and empirical, theoretical, mixed, and experimental paper types reveal that there exists only a (very) statistically significant difference by theoretical paper type with a coefficient of .442 ± .161. A difference also holds between disciplines, revealing a coefficient for Economics of -.236 ± .138 at a 10% significance level (p-value: 8.8%). These differences, however, are relatively unimportant when we recall that theoretical paper type has no statistically significant effect on the number of qualitative magnitude claims and Economics and Political Science do not differ statistically from the average effect of Medicine.

"NoM"

The number of instances where one would expect a magnitude claim but does not find one is an indicator of information exclusion, thereby lending to a loss of information density. The mean number of Economics, Political Science, Chemistry, and Medicine incidences for this criterion are 1.768 ± .076, 1.496 ± .099, .752 ± .059, and .7 ± .081, respectively. Both the sciences and social sciences have similar intra-discipline averages, while social sciences has a higher average than the sciences. This contributes further to our thoroughly developed understanding that sciences have more information density than social sciences. The probabilities associated with having an instance where one would expect a magnitude claim but does not encounter one for a given finding are 68.105% ± 1.829%, 74.502% ± 1.945%, 23.828% ± 1.517%, and 10.417% ± .75% for Economics, Political Science, Chemistry, and Medicine, respectively. These probabilities align fairly well with the associated means.

To test the extent of these intra-disciplinary similarities, a regression on "NoM" is carried out with the disciplines relative to a Medicine constant. Medicine as a constant generates the aforementioned .7 ± .081, while Chemistry, Economics, and Political Science coefficients are .052 ± .100, 1.068 ± .111, and .796 ± .128, respectively. The coefficient for Chemistry, however, is not statistically significant (p-value: 60.5%). This cements that Chemistry and Medicine have the same effect on the number of "NoM" claims. An F-test shows that despite the similarity between Economics and Political Science in their averages, the coefficients are statistically different from one another (p-value: 2.92%). It seems that this difference is just large enough to make these coefficients different. Nonetheless, the social sciences outweigh the sciences in their "NoM" impacts.

Looking for differences by paper type alone revisits a comparison between the social sciences and sciences, since experimental paper type is the constant. Relative to the constant of .807 ± .051, empirical, theoretical, and mixed paper types show effects of .903 ± .103, .724 ± .119, and .793 ± .190, respectively. An F-test reveals that the coefficients for empirical, theoretical, and mixed paper types are statistically the same in magnitude (p-value: 43.2%). Since these types are a large portion of Economics and Political Science disciplines, we might expect a difference by experimental paper type to contribute to the difference seen by discipline.

Relative to an experimental Medicine paper (as a constant of .7 ± .082), Chemistry, empirical, theoretical, and mixed paper types show no statistically significant differences. This means that these factors are no different from the effect of an experimental Medicine paper, which seems fairly intuitive following the results outlined earlier. Economics and Political Science disciplines are still much larger with respective coefficients of 1.096 ± .230 and .841 ± .261. Including interactions between Political Science and Economics with experimental paper type reveals that there exists no difference between Political Science and Economics by experimental paper type (p-values: 28.8% for Economics and 29.4% for Political Science). This further clarifies that the difference perceived between Political Science and Economics is solely attributed to discipline without any contribution from paper type.

To test differences between Political Science and Economics alone, Political science is held as a constant, and Economics is varied by interactions with empirical, theoretical, and experimental paper type (once again mixed paper type is left out because it has too little variation). Unexpectedly, there are no indicated differences between Political Science and Economics, neither by discipline nor by any paper type. Though this runs counter to the previous assertion that Economics and Political Science are solely statistically different from each other by discipline, these results make sense. We can attribute the difference between discipline as a difference between social science and a portion of science (since the comparisons were made to Medicine). This difference, then, will not exist when only considering the differences within social science.

"NoMamb"

The mean number of non-magnitude claims susceptible to misinterpretation as magnitude claims for Economics, Political Science, Chemistry and Medicine are .1 ± .023, .044 ± .013, .028 ± .010, and .196 ± .031, respectively. Unlike the other cases, Medicine has the highest mean for this claim type, leaving one to qualify the superiority of information density championed throughout this text for Medicine. With the science and social science distinction, we can clearly see that Medicine makes up most of the effect from science. The associated probabilities for a finding having a “NoMamb” claim is 3.852% ± .76%, 2.191% ± .65%, .89% ± .33%, and 2.917% ± .41% for Economics, Political Science, Chemistry, and Medicine, respectively. These probabilities align somewhat with the means found, and likely are not the most predictive due to the low absolute incidence of “NoMamb” claims in the data.

Relative to Medicine (as a constant of .196 ± 031), Economics, Political Science, and Chemistry have coefficients of -.096 ± .038, -.168 ± .033, and -.152 ± .034, respectively. Though these differences are expected from the means, the similarities between coefficients are different. An F-test shows that Political Science and Chemistry coefficients are not different in magnitude from one another (p-value: 33.77%). Unlike other cases, Political Science and Economics are statistically different from one another (p-value: 3.34%), highlighting a cross-field relationship that we do not see in most cases. Further, Medicine is left as the more important coefficient to be concerned with, since the effects from Economics, Political Science, and Chemistry and relatively small.

Relative to experimental paper type (with a coefficient of .117 ± .016), empirical, theoretical, and mixed paper types have coefficients of -.013 ± .028, -.107 ± .019, and -.042 ± .045. Initially, this prompts the belief that empirical and mixed papers are not much different from experimental papers. Looking at the p-values of these coefficients (63.9% and 34.4% respectively), this inclination is confirmed and leaves empirical and mixed types to have no statistically significant difference from experimental type in the magnitude of their effects on “NoMamb” claims. The theoretical type coefficient is always statistically significant, providing a robust opposition to the experimental type effect.

Relative to experimental Medicine papers (with a constant of .196 ± .031), Economics Political Science and empirical and mixed paper types are not statistically different in magnitude. Again, Chemistry is statistically different with a coefficient of -.168 ± .033, and so is theoretical paper type with a coefficient of -.090 ± .077. This follows, of course, from the effects outlined in the previous paragraphs. An inclusion of interactions between Political Science and Economics with experimental paper type into this model renders differences with no statistically significance between Political Science and Economics by experimental paper type. This outlines an initial response that most of the variation in "NoMamb" is a product of discipline and not paper type.

Holding Political Science constant (with a coefficient of .038 ± .038), there are no statistically significant differences found, neither by discipline, nor by paper type interacted with discipline. As in other sections, we observe that Political Science and Economics are very much alike in many of their effects on the various criteria. In this case, there is absolutely no difference, suggesting that Political Science and Economics have the exact same range of effects (.038 ± .038) on the number of "NoMamb" non-magnitude claims. We are left certain that the social sciences move more closely together than the sciences.

Citations

This section focuses on the effects of the "MQuant, MQuantSE, MQual, NoM, and NoMamb" criteria on the number of citations received by discipline and by paper type. The differences revealed should make the relevance of this exercise more salient, providing a formulaic way to both estimate the average number of citations one's paper will receive and approximate the optimal solution to maximize paper citations. These effects are evaluated in three levels: (1) isolated effects from the aforementioned criteria, disciplines, and paper type, (2) isolated effects with first order interactions (e.g. "MQuant" interacted with discipline), and (3) all of the first and second level effects with added interactions between the criteria, discipline, and paper type together.

When the isolated effects are regressed on the number of citations, the only criterion that is statistically significant is the number of quantitative magnitude claims (p-value: 2.1%): a one quantitative magnitude claim increase promotes a .953 ± .411 increase in the number of citations. By virtue of writing a paper in Economics or Chemistry, one is penalized with statistically significant changes of -8.934 ± 2.967 and -20.195 ± 2.317 in the number of citations, respectively. Medicine has no variation whatsoever while Political Science has a coefficient with no statistical significance, suggesting that both of these disciplines have no notable effect on the number of citations received. Paper type, however, sees statistically significant variation for all paper types, including positive coefficients of 9.740 ± 3.167, 9.485 ± 3.084, 8.395 ± 3.189, and 19.569 ± 2.570 for empirical, theoretical, mixed, and experimental paper types respectively. An F-test confirms that these empirical, theoretical, and mixed type coefficients are not statistically different in magnitude from one another (p-value: 29.42%). Further, the large standard errors lend to an imprecise estimate of the effects of all paper types. Nonetheless, we can confirm that they are positive in direction.

With the inclusion of first level interactions, (all possible two-variable combinations between the criteria, discipline, and paper type) most coefficients are rendered to a state with no statistical significance. The only statistically significant effect (at all levels of significance) for discipline comes from Chemistry with a coefficient of -18.395 ± 3.503. The large standard error once again makes this an imprecise estimate, but is recognized as a penalty with certainty. The other statistically significant measure is for experimental paper type (for all significance levels) with a coefficient of 18.774 ± 3.502. Once again, the standard error is imprecise, but moves very closely with Chemistry. This is because Chemistry makes up most of the variation brought about by experimental paper type in this case. All of the interactions, however, are not statistically significance in this model.

The inclusion of second level interactions (all possible three-variable combinations between the criteria, discipline, and paper type), reestablishes statistically significant effects that allow for the long-awaited recommendations by discipline and paper type. Isolated criteria effects feature a continued statistical significance for the number of quantitative magnitude claims at the 10% significance level (p-value: 6.2%) with a coefficient of -6.284 ± 3.369. This suggests that the effect overall should be negative, though the large standard error leaves room for doubt concerning the true effect. The number of quantitative magnitude claims with standard errors becomes very statistically significant (p-value: .5%) but has little effect on the number of citations with a coefficient of -.332 ± .119. The Chemistry discipline and the experimental paper type feature the exact same effects from the previous model (at all significance levels) of -18.395 ± 3.503 and 18.774 ± 3.502, respectively.

The effect of the number of quantitative magnitude claims varies by discipline, with coefficients of 3.450 ± 1.793, 6.285 ± 3.369, and 7.539 ± 3.413 for Economics, Chemistry and Medicine, respectively. The standard errors are also quite large, similar to the pure effects from the number of quantitative magnitude findings for Chemistry and Medicine. The only statistically significant interaction with the number of quantitative findings with standard errors is one with Medicine for a coefficient of 1.401 ± .823 (p-value: 8.9%). The interaction between the number of qualitative magnitude claims and theoretical paper type produces a statistically significant effect (for all levels of significance) of 1.694 ± .481. The number of ambiguous non-magnitude claims varies between the sciences, and experimental paper type (which hold for all significance levels). The respective coefficients of Chemistry and Medicine are large (and so are the standard errors): -21.697 ± 4.418 and -25.582 ± 5.341. The coefficient for experimental paper type is 24.466 ± 5.295, effectively cancelling out the negative effects brought about by the sciences in their disciplinary effects.

Finally, two variations are brought about by the second level interactions. Political Science varies with statistical significance for experimental paper type when it possesses quantitative magnitude claims with a coefficient of 19.779 ± 7.206 (p-value: .6%). Though this standard error is large, we can be certain that the overall effect is positive. For all levels of significance, experimental Economics papers vary with the number of ambiguous non-magnitude claims for a coefficient of -25.633 ± 6.890.

Given these effects on the number of citations, I will now explore the optimal composition of a selected sample of abstracts that would benefit from changes in their compositions. Specifically, I will focus on the types of abstracts that have statistically significant differences: experimental Economics papers, experimental Political Science papers, and science papers. The effects for the other paper types are of a more general variety, and can be easily calculated with the isolated effects outlined above (such as observing the interaction between the number of quantitative magnitude claims and Economics to determine the fully captured average effect on the number of citations for quantitative magnitude claims found within empirical, theoretical, and mixed Economics papers).

Case Study

The statistically significant effects from the citations model with both tiers of interactions are explored for their cumulative contributions to the predicted number of citations received. Specifically, experimental paper types from each discipline possess effects from the second level of interactions, motivating a closer look at the methods that the model predicts for increases in citations.

The following experimental Economics abstract captures the effects from the number of quantitative magnitude claims (the effect from standard errors cannot be included because the sample does not contain experimental Economics abstracts with standard errors):

> "This paper utilizes a Norwegian experiment with exogenous wage changes to study teachers' turnover decisions. Within a completely centralized wage setting system, teachers in schools with a high degree of teacher vacancies in the past got a wage premium of about 10 percent during the period 1993-94 to 2002-03. The empirical strategy exploits that several schools switched status during the empirical period. In a fixed effects framework, I find that the wage premium reduces the probability of voluntary quits by six percentage points, which implies

a short run labor supply elasticity of about 1 1/4 ."[†††††]

This particular experimental Economics abstract contains three quantitative magnitude claims, which have a large negative effect on the number of citations. Cumulatively, this abstract should get effects of: -6.284 from each quantitative magnitude claim, 18.775 from the virtue of being an experimental paper type, and a balancing effect of 3.450 for each quantitative magnitude claim in an Economics abstract generally. This model predicts that this abstract should receive approximately 10 (10.273) citations. As made evident by these calculations, the effect from quantitative magnitude claims is negative overall. This suggests that this abstract can be rewritten with the exclusion of magnitude claims, providing an estimated number of 19 citations (18.775), deriving solely from the effect of being an experimental paper type. It is important to consider the large standard errors attached to these estimates when informed that this paper has realized a total of 0 citations in reality. These qualifications suggest that this model may not be the best predictive measure. Nonetheless, it still captures the cumulative positive effect that should result on average.

These effects should, in principal, motivate more ambiguity in experimental Economics abstracts by leaving out quantitative magnitude claims when possible (since each claim has a predictive loss of 2.834 citations). This is not to be confused with ambiguous non-magnitude claims, however, which would result in a decrease in the number of citations of 1.167 citations per claim.

Experimental Political Science abstracts benefit the most from quantitative

[†††††] Falch, Torberg. 2011. "Teacher Mobility Responses to Wage Changes: Evidence from a Quasi-natural Experiment." *American Economic Review*, 101(3): 460–65.

magnitude claims. The following abstract suffers from a lack of quantitative magnitude claims:

> "Social scientists often attribute moderation of the political salience of ethnicity in ethnically diverse societies to the presence of cross-cutting cleavages that is, to dimensions of identity or interest along which members of the same ethnic group may have diverse allegiances. Yet, estimating the causal effects of cross-cutting cleavages is difficult. In this article, we present experimental results that help explain why ethnicity has a relatively minor political role in Mali, an ethnically heterogeneous sub-Saharan African country in which ethnic identity is a poor predictor of vote choice and parties do not form along ethnic lines. We argue that the cross-cutting ties afforded by an informal institution called "cousinage" help explain the weak association between ethnicity and individual vote choice. The experimental research design we introduce may be useful in many other settings."[‡‡‡‡‡]

The model predicts that this abstract should see approximately 19 (18.774) citations from the pure effect of being an experimental paper type. Since the effect of an increase in the number of quantitative magnitude claims for experimental Political Science papers (19.779) outweighs the negative effect brought about by a pure effect from an increase in the number of quantitative magnitude claims (-6.284), the model suggests that an experimental Political Science paper would want to house as many quantitative magnitude claims as possible to obtain more citations. Though it doesn't

‡‡‡‡‡ Dunning, T. & Harrison, L. 2010. "Cross-cutting Cleavages and Ethnic Voting: An Experimental Study of Cousinage in Mali." *American Political Science Review,* 104(01), 21-39.

seem feasible to provide an infinite number of quantitative magnitude claims in an abstract, it is definitely conceivable to place as many relevant quantitative magnitude claims as possible. This paper, specifically, attributes a "weak association" between ethnicity and individual vote choice, which could be quantified by a correlation. This inclusion would increase the citations by an estimated 13.495 counts. Once again, the predictive abilities of the model are brought into question. While the model predicts 19 citations, this paper has only received 2 citations thus far. This lack of precision can be again attributed to the large standard errors observed. We can rest assured, however, that the net effects (a positive gain from quantitative magnitude claims inclusion in experimental Political Science papers) are sound.

While the effects from the social sciences oppose each other and do not derive variation from many sources, the sciences move in a similar way and have more sources of variation. As before, Medicine and Chemistry are inherently experimental paper types, so that an interaction between Medicine and the number of ambiguous non-magnitude claims, for example, captures the statistically significant differences brought about by "experimental" Medicine papers with ambiguous non-magnitude claims.

Medicine papers benefit from the number of quantitative magnitude claims and suffer from the additions of quantitative magnitude claims with standard errors and ambiguous non-magnitude claims. The following abstract features all of these effects:

> "A total of 1209 adults were screened (mean age, 41 years; body-mass index [the weight in kilograms divided by the square of the height in meters], 34), of whom 938 entered the low-calorie-diet phase of the study. A total of 773 participants who completed that phase were randomly assigned to one of the five maintenance

diets; 548 completed the intervention (71%). Fewer participants in the high-protein and the low-glycemic-index groups than in the low-protein-high-glycemic-index group dropped out of the study (26.4% and 25.6%, respectively, vs. 37.4%; P=0.02 and P=0.01 for the respective comparisons). The mean initial weight loss with the low-calorie diet was 11.0 kg. In the analysis of participants who completed the study, only the low-protein-high-glycemic-index diet was associated with subsequent significant weight regain (1.67 kg; 95% confidence interval [CI], 0.48 to 2.87). In an intention-to-treat analysis, the weight regain was 0.93 kg less (95% CI, 0.31 to 1.55) in the groups assigned to a high-protein diet than in those assigned to a low-protein diet (P=0.003) and 0.95 kg less (95% CI, 0.33 to 1.57) in the groups assigned to a low-glycemic-index diet than in those assigned to a high-glycemic-index diet (P=0.003). The analysis involving participants who completed the intervention produced similar results. The groups did not differ significantly with respect to diet-related adverse events."[§§§§§]

This abstract in particular has one quantitative magnitude claim, three quantitative magnitude claims with standard errors, and one ambiguous non-magnitude claim. The model suggests, then, a decrease of 6.284 citations from isolated quantitative magnitude claim effects, a decrease of .996 citations from quantitative magnitude claims with standard errors, an increase of 18.774 from the virtue of being an experimental paper type, an increase of 7.539 for the quantitative magnitude claim based on the interaction with Medicine, an increase of 4.203 from the interaction between the number of quantitative magnitude claims with standard errors and Medicine, a decrease of 25.582

[§§§§§] Larsen, T.M., Dalskov, S., Van Baak, M. et al. 2010. "Diets with High or Low Protein Content and Glycemic Index for Weight-Loss Maintenance." *N Engl J Med,* 363(22), 2102-2113.

from the interaction between ambiguous non-magnitude claims and Medicine, and a balancing effect of 24.466 for ambiguous non-magnitude claims in experimental papers. Cumulatively, then, this paper should receive approximately 22 citations (22.12) from this model. Medicine papers, therefore, have a net increase of 1.255 per quantitative magnitude claim, a net increase of 1.069 per quantitative magnitude claim with standard errors, and a net decrease of -1.116 citations per ambiguous non-magnitude claim. This suggests that these papers should place as many quantitative magnitude claims and quantitative magnitude claims with standard errors within their abstracts as possible. Also, they should avoid the use of ambiguous non-magnitude claims. This model somewhat better approximates the number of citations for medicine, comparing an estimate of 22 citations for this abstract with a realized total of 39 citations. Like previously accounted for, this model does not capture all of the effects that can influence the number of citations received, and features large standard errors for the estimated coefficients (the influence may, in fact, have to do with a higher level of activity observed in the Medicine discipline compared to those of the other disciplines). Still, we can parse out the effects brought about by quantitative magnitude claims, quantitative magnitude claims and ambiguous non-magnitude claims as beneficial overall from the quantitative magnitude claims and quantitative magnitude claims with standard errors and detrimental overall from the inclusion of ambiguous non-magnitude claims.

Chemistry papers feature a negative effect from discipline, a positive effect from experimental paper type, and variation produced from quantitative magnitude claims and ambiguous non-magnitude claims by discipline. The following Chemistry abstract features these effects along with isolated effects from the number of quantitative magnitude claims:

> "A significant enhancement of thermoelectric performance in layered oxyselenides BiCuSeO was achieved. The electrical conductivity and Seebeck coefficient of BiCu(1-x)SeO (x = 0-0.1) indicate that the carriers were introduced in the (Cu(2)Se(2))(2-) layer by Cu deficiencies. The maximum of electrical conductivity is 3 x 10(3) S m(-1) for Bicu(0.975)Seo at 650 degrees C, much larger than 470 S m(-1) for pristine BiCuSeO. Featured with very low thermal conductivity (similar to 0.5 W m(-1) K(-1)) and a large Seebeck coefficient (+273 mu V K(-1)), ZT at 650 degrees C is significantly increased from 0.50 for pristine BiCuSeO to 0.81 for BiCu(0.975)SeO by introducing Cu deficiencies, which makes it a promising candidate for medium temperature thermoelectric applications."[******]

This abstract features one ambiguous non-magnitude claim, and seven quantitative magnitude claims. The isolated effects from quantitative magnitude claims contribute to a decrease of 43.988 citations (conceivably a large effect). Solely from being in a paper written within the Chemistry discipline, the model predicts a decrease of 18.395. The same effect for all experimental paper types counteracts the decrease from discipline, with an increase of 18.774 citations. The effects brought about by the quantitative magnitude claims specific to Chemistry outweigh the isolated decrease from the effect of quantitative magnitude claims with an increase of 43.995 citations. Finally, effects from ambiguous non-magnitude statements are associated with a decrease of

[******] Liu, Y., Zhao, L., Liu, Y. et al. 2011. "Remarkable Enhancement in Thermoelectric Performance of BiCuSeO by Cu Deficiencies." *Journal of the American Chemical Society,* 133(50), 20112-20115.

21.697 citations from interacting with Chemistry, and an increase of 24.466 citations from interacting with experimental paper type. Overall, this model predicts that this abstract would receive a total of 3.155 citations, which is an inflated estimate over the realized total of 1 citation. These effects seem more predictive than previous comparisons with the model, but as usual, feature large standard errors. The large standard errors for the number of ambiguous non-magnitude claims, for example, are reasonable considering the low incidence of this type of claim within Chemistry.

This model cumulatively predicts that Chemistry papers will receive a reward of .001 citations per quantitative magnitude claim. This reward is highly subject to skepticism because of the large standard errors and the very closeness of this reward to zero, allowing us to ignore this negligible effect. Inclusion of ambiguous non-magnitude claims, however, lends to an increase of 2.769 citations per claim. This suggests that Chemistry papers should be more ambiguous. Further, this extends to a claim that these abstracts should be, in a way, more misleading to lay-readers" (which many may argue makes research inaccessible to many and is therefore detrimental). These notions will be further explored in the following implications section.

Implications

This paper initially set out to determine only the differences in the level of information density for Economics, Political Science, Medicine, and Chemistry abstracts to function as a sort of catalog for future information density inquiries. Soon thereafter, the question of optimal abstract construction came to mind. But what is the right way to define "optimal" in this context? A direct association with my hypothesis would have defined optimality as a condition of high information density that would leave the sciences as the victors (which does not imply clarity of information). This, however, proved to be a self-supporting mechanism that did not validate the use of my criteria ("MQuant", etc.). In order to make the criteria more salient, the effects of these criteria on the number of citations received was explored. This not only lent legitimacy to the criteria used, but also formed a foundation for specific recommendations in constructing "optimal" abstracts: maximizing the citations received for any given paper in each field, by discipline and paper type by including or excluding certain criteria.

Economics abstracts generally see negative consequences (in terms of the number of citations projected) for the inclusion of quantitative magnitude claims and quantitative magnitude claims with standard errors. These criteria intuitively provide the most accurate and precise perceptions of estimated effects and are therefore the most valued. Since the inclusion of these criteria adversely affects the number of predicted citations, their exclusions are recommended. This, incentive, however, diminishes information density and precision, leaving a more ambiguous abstract that may mislead readers. These effects, then, are bad for the reader, but good for the author. The number of qualitative magnitude claims is positive for theoretical Economics abstracts, suggesting that these claims should be included as often as possible. Though this partly remedies the absence of "MQuant" and "MQuantSE" claims by introducing a layer of precision, it is not substantial enough to prompt an accurate interpretation of the information communicated within the abstract. Ambiguous non-magnitude claims are negative in their overall effects for experimental Economics abstracts, and should therefore be excluded. This finding is important because it incentivizes authors to be more explicit about stating magnitude claims and statistical claims (by writing "statistically significant" instead of “significant”). In turn, this benefits the lay-reader by making the abstract easier to interpret and lends itself to the formation of a “better” abstract. Unfortunately, the effects from the qualitative claims and ambiguous non-magnitude claims only apply to theoretical and experimental paper types, respectively. This suggests that these claims provide no incentive or disincentive for empirical and mixed paper types, making their inclusions a stylistic choice and not a choice that incentivizes clarity. Cumulatively, we can gauge that Economics abstracts are not inherently incentivized by the construction of information density. Though this is an anticipated loss for the reader, the author can maximize his/her citations by promoting ambiguity (not to be confused with “NoMamb” inclusion).

Similarly for Political Science, the number of quantitative magnitude claims and the number of quantitative claims with standard errors produce negative effects for the predicted number of citations. This again is an unfavorable result, because it prompts the exclusion of the best criteria for information density and clarity. Experimental Political Science abstracts, however, benefit from the use of quantitative magnitude claims. This is welcome news because it incentivizes the use of this highly valued criterion. Unfortunately, experimental Political Science papers are also positively affected by the inclusion of ambiguous non-magnitude claims (even more so because it has a higher coefficient than “MQuant”). This simultaneously promotes higher and lower levels of information density, leaving it to the discretion of the author to adopt a strategy that is best suited to his/her preferences. If authors of experimental Political Science papers all seek to maximize the number of citations, then they would see the inclusion of ambiguous non-magnitude claims as the claim with more beneficial weight. This again, is not a favorable outcome for the reader who would be muddled with numerous "NoMamb" claims, causing him/her to severely misinterpret the nature of the findings within a given abstract. The author is also incentivized to include "MQuant" claims, but the inclusion of these claims could potentially be a cause for more confusion when coupled with the presence of "NoMamb" claims. Political Science is, as a whole, comparable to Economics in the level of information density incentivized. I believe, however, that the incentive to include "NoMamb" claims in experimental Political Science abstracts leaves readers worse off than the pure exclusions of "MQuant" and "MQuantSE" claims. This implies, then, that experimental Political Science abstracts are more likely to detract from a lay-readers understanding than experimental Economics abstracts would.

Chemistry is relatively the worst discipline in terms of the incentives it faces for its citations. An increase in number of quantitative magnitude claims provides only for a marginal improvement in the number of citations and is too small to be considered an effective incentive for the inclusion of quantitative information. Quantitative magnitude claims with standard errors are not beneficial to receiving citations, and are therefore another unsought exclusion from the construction of Chemistry abstracts. Thus far we can see that Chemistry is similar to Economics and Political Science in these respects. Where it differs is the positive incentive for ambiguous non-magnitude claims for all paper types. Though this effect was similarly present in Political Science, it holds for all Chemistry abstracts and is therefore more present. These effects cumulatively show that Chemistry is the most highly incentivized by ambiguity, both in the exclusion of quantitative information and the inclusion of ambiguous non-magnitude claims. This may suggest that readers should avoid reading Chemistry abstracts and should instead focus on the body of the paper to obtain a more cohesive understanding of the research in question. Another interest effect is the large negative effect observed by simply writing an abstract in the Chemistry discipline. This may create a disincentive enough for authors of Chemistry papers to pursue research in other disciplines. We generally observe, however, that Chemistry research does exist, and therefore can conclude that obtaining citations is very unlikely the sole motivation for these researchers.

While Medicine's companion, Chemistry, shows the least promise for abstract clarity, Medicine proves to show the most promise of all the disciplines. Medicine is incentivized to include quantitative magnitude claims and quantitative magnitude claims with standard errors, and to exclude ambiguous non-magnitude claims. These incentives naturally lend themselves to a higher order of abstract clarity, providing quantitative impressions of estimated effects and leaving out claims that may lead to false conclusions by the reader. Since these incentives hold for all Medicine papers and these effects are cumulatively realized only by Medicine papers, we can conclude that Medicine papers are the best prospect for high levels of information density (which we have confirmed in the initial analysis) and information clarity. Medicine also derives an additional benefit from writing in the experimental paper type (as does every discipline). This solidifies that authorship in Medicine is almost utopian in its delivery of information. Intuitively, this makes sense because Medicine studies (like Chemistry experiments) need to be highly precise in order to facilitate exact replication. Furthermore, since this writing has added ramifications for humans in the form of life and death, it may seem natural that the discipline takes extra care to delineate results and methods carefully. Medicine is effectively a champion of the reader (which is likely a conscious effort on the part of the author).

One notable effect brought about by paper type is the sizeable premium rewarded for writing in the experimental paper type. This observation should imply that authors are substantially incentivized to write in the experimental paper type and we should see a higher frequency of experimental papers as a result. This trend is not identifiable in Economics and Political Science, leading to the conclusion that there must be other factors other than citation counts that drive research of a particular paper type (passion, for example). The Chemistry discipline effectively sees a cancellation of this premium, with its disincentive for writing in Chemistry as a discipline. Medicine, however, gains this premium and the premiums from the number of quantitative magnitude claims and quantitative magnitude claims with standard errors just from the virtue of writing in experimental paper type for all of its papers. Since the effect from experimental paper type holds for all levels of statistical significance, we conclude that it is robust and generally enticing for authors in Economics, Political Science, and Medicine.

Limitations

The main source of imprecision in the models comes from the large, robust standard errors observed. Though this allows for claims about the direction of cumulative effects, there cannot be precise numerical values attached to the empirically estimated coefficients. To obtain precise estimates of these coefficients, then, more data would need to be gathered and coded (in the range of three times the amount of abstracts that has already been included). There is a time barrier for this process, however, due to the accuracy required of this task. This amount of data would likely take an entire semester to read, code, and input. Another method to reduce the size of the standard errors, which might have proved more effective, would have been to find 50 abstracts for each criterion: "MQuant", "MQuantSE", "MQual", "NoM" and "NoMamb". This, however, would make it difficult to control for time effects. Also, it may be less efficient, because one cannot simply glance at an abstract and determine whether these criteria are going to be found consistently (these abstracts would need to be coded, too).

An analysis of time differences would have provided a more thorough look at the differences between disciplines and the implications of these differences for the number of citations received. This would feature collecting data from an earlier period (such as the 1980s) and comparing it to the data already collected with the 250 most recent abstracts. Since more data needs to be collected to generate smaller standard errors just for the most recent abstracts, this process would conceivably involve a larger time cost. These time differences would then be used to see whether the effects of the criteria have changed in significance (and statistical significance) over time.

There are two conceivable sources of omitted variance within the model that come to mind when considering the factors that have an effect on the number of citations received: the level of activity within each field, and the isolated effect of time. The level of activity within each discipline likely has a statistically significant effect on the number of citations received. Medicine, for example, publishes multiple papers daily, while Economics operates on a monthly basis. This measure would have been "the average number of articles published monthly" in order to capture this activity for the months observed in the data. The time horizon, though the 250 most recent abstracts for each discipline were used, would not be susceptible to this analysis because the 250 most recent abstracts were used rather than a specified number of months. Another source could simply be the effect of time, where there is likely a positive correlation between the amount of time since a paper has been published and the number of citations it receives based on the duration of time and nothing else. Again, this would prove difficult to compare with the current data (because of variable time horizons), but would be an effective measure within the time differences model aforementioned (1980s versus current). These two measures would likely increase the amount of variation explained within the model substantially, and would be worthwhile to consider as a result.

Conclusion

This paper was written for reasons two-fold: (1) to describe the differences in the levels of quantitative information found within Economics, Political Science, Chemistry, and Medicine, and (2) to determine whether these differences created incentives for authors within these disciplines to construct their abstracts in a way that promoted information clarity for lay-readers. We saw that the differences vary substantially between disciplines, but generally move together when grouped together (social science versus science). Then, we observed that Economics and Political Science are more alike than Medicine and Chemistry, with Medicine providing for a majority of the effects captured in the science group analysis. The incentives for authors were specified for each discipline, allowing for claims about which criteria would contribute most to generating citation counts for each discipline by paper type. This extended to a welfare analysis for the lay-reader, revealing that Medicine abstracts are best suited for matching the incentives of authors with the information clarity desired for lay-readers. Both objectives for this topic were met, but there is room for a deeper exploration of authors' incentives and their impacts on the information presented to lay-readers. Whether the criteria are reformed to measure a different form of clarity or authors are surveyed, this question can be modified to examine other sources of motivation.

Appendix

Table 1. Social Science versus Science.

	Findings	MQuant	MQuantSE	MQual	NoM	NoMamb
Socsci	-2.636 (.179)	-2.386 (.147)	-.824 (.080)	-.292 (.054)	.906 (.080)	-.04 (.021)*
Constant	4.938 (.164)	2.646 (.145)	.828 (.080)	.626 (.046)	.726 (.050)	.112 (.017)
N	1,000	1,000	1,000	1,000	1,000	1,000
R^2	.1790	.2086	.0968	.0284	.1136	.0035

*Statistically significant at 10% level

Table 2. Social Science versus Science by paper type.

	Findings	MQuant	MQuantSE	MQual	NoM	NoMamb
Socsci*Empirical	-2.250 (.193)	-2.234 (.154)	-.819 (.080)	-.174 (.067)	.984 (.103)	-.008 (.029)*
Socsci*Theoretical	-3.067 (.203)	-2.548 (.147)	-.828 (.080)	-.394 (.060)	.805 (.119)	-.102 (.020)
Socsci*Mixed	-2.763 (.261)	-2.371 (.172)	-.828 (.080)	-.401 (.095)	.874 (.190)	-.037 (.045)*
Socsci*Experimental	-2.560 (.270)	-2.446 (.166)	-.828 (.080)	-.337 (.108)	.985 (.221)	.066 (.067)*
Constant	4.938 (.164)	2.646 (.145)	.828 (.080)	.626 (.046)	.726 (.050)	.112 (.017)
N	1,000	1,000	1,000	1,000	1,000	1,000
R^2	.1862	.2101	.0968	.0360	.1156	.0165

*Not statistically significant estimates

Table 3. Differences solely between disciplines.

	Findings	MQuant	MQuantSE	MQual	NoM	NoMamb
Economics	-4.124 (.253)	-3.472 (.247)	-1.648 (.141)	.024 (.057)*	1.068 (.103)	-.096 (.038)
Political Science	-4.712 (.263)	-3.688 (.243)	-1.656 (.141)	-.012 (.057)*	.796 (.111)	-.152 (.034)
Chemistry	-3.564 (.287)	-2.388 (.268)	-1.656 (.141)	.596 (.088)	.052 (.100)*	-.168 (.033)
Constant	6.72 (.239)	3.84 (.242)	1.656 (.141)	.328 (.040)	.7 (.081)	.196 (.031)
N	1,000	1,000	1,000	1,000	1,000	1,000
R^2	.3470	.3139	.2924	.0879	.1189	.0380

* Not statistically significant estimates

Table 4. Differences solely between paper types.

	Findings	MQuant	MQuantSE	MQual	NoM	NoMamb
Empirical	-2.039 (.184)	-2.032 (.146)	-.751 (.074)	-.146 (.065)	.903 (.103)	-.013 (.028)
Theoretical	-2.855 (.263)	-2.346 (.138)	-.760 (.074)	-.366 (.057)	.724 (.119)	-.107 (.019)
Mixed	-2.552 (.287)	-2.169 (.165)	-.760 (.074)	-.373 (.093)	.793 (.190)	-.042 (.045)
Constant	4.727 (.155)	2.444 (.136)	.760 (.074)	.598 (.043)	.807 (.051)	.117 (.016)
N	1,000	1,000	1,000	1,000	1,000	1,000
R^2	.1583	.1739	.0807	.0298	.0934	.0149

Table 5. Differences of disciplines and paper type relative to Medicine abstracts.

	Findings	MQuant	MQuantSE	MQual	NoM	NoMamb
Economics	-4.173 (.324)	-3.576 (.257)	-1.654 (.141)	-.036 (.104)*	1.096 (.230)	-.005 (.074)*
Political Science	-4.680 (.353)	-3.769 (.257)	-1.661 (.141)	-.046 (.119)*	.841 (.261)	-.046 (.071)*
Chemistry	-3.564 (.287)	-2.388 (.269)	-1.656 (.141)	.596 (.088)	.052 (.101)*	-.168 (.033)
Empirical	.366 (.247)*	.233 (.099)	.010 (.010)*	.165 (.111)*	-.027 (.238)*	-.069 (.069)*
Theoretical	-.386 (.258)*	-.056 (.087)*	.002 (.002)*	-.054 (.110)*	-.119 (.247)*	-.158 (.065)
Mixed	-.042 (.312)*	.136 (.125)*	.002 (.002)*	-.061 (.131)*	-.031 (.295)*	-.090 (.077)*
Constant	6.72 (.239)	3.84 (.242)	1.656 (.141)	.328 (.040)	.7 (.082)	.196 (.031)
N	1,000	1,000	1,000	1,000	1,000	1,000
R^2	.3530	.3152	.2924	.0953	.1201	.0493

*Not statistically significant estimates

Table 6. Differences between disciplines by experimental paper type.

	Findings	MQuant	MQuantSE	MQual	NoM	NoMamb
Economics	-4.07 (.256)	-3.449 (.248)	-1.647 (.141)	.045 (.060)*	1.095 (.115)	-.114 (.038)
Political Science	-4.758 (.264)	-3.691 (.244)	-1.661 (.141)	-.022 (.057)*	.764 (.129)	-.153 (.034)
Chemistry	-3.564 (.287)	-2.388 (.269)	-1.656 (.141)	.596 (.088)	.052 (.100)*	-.168 (.033)
Econ*Experimental	-.45 (.202)	-.191 (.122)*	.009 (.009)*	-.173 (.098)**	-.229 (.215)*	.152 (.094)*
PolSci*Experimental	.772 (.534)*	.051 (.108)*	2.17e^-14 (5.13e^-15)	.160 (.233)*	.536 (.510)*	.024 (.066)*
Constant	6.72 (.239)	3.84 (.242)	1.656 (.141)	.328 (.040)	.7 (.081)	.196 (.031)
N	1,000	1,000	1,000	1,000	1,000	1,000
R^2	.3484	.3140	.2924	.0894	.1219	.0435

*Not statistically significant estimates ** Statistically significant at 10% level

Table 7. Differences between Economics and Political Science by paper type.

	Findings	MQuant	MQuantSE	MQual	NoM	NoMamb
Economics	.170 (.410)*	.236 (.218)*	-2.70e^-16 (3.79e^-15)*	-.236 (.138)**	.066 (.407)*	.104 (.102)*
Empirical	.293 (.312)*	.063 (.113)*	-6.72e^-16 (1.27e^-15)*	.182 (.144)*	-.005 (.258)*	.053 (.048)*
Theoretical	-.584 (.315)**	-.147 (.097)*	-5.44e^-16 (9.99e^-16)*	-.164 (.124)*	-.235 (.268)*	-.038 (.038)*
Experimental	.618 (.588)*	.008 (.141)*	-6.01e^-16 (9.61e^-16)*	.159 (.259)*	.423 (.546)*	.028 (.075)*
Econ*Empirical	.332 (.458)*	.045 (.241)*	.016 (.016)*	.169 (.171)*	.184 (.447)*	-.082 (.112)*
Econ*Theoretical	.623 (.468)*	-.113 (.226)*	3.83e^-16 (3.64e^-15)*	.442 (.161)	.375 (.456)*	-.080 (.104)*
Econ*Experimental	-.704 (.690)*	-.236 (.266)*	3.86e^-16 (3.69e^-15)*	-.030 (.283)*	-.499 (.677)*	.062 (.151)*
Constant	2.115 (.265)	.192 (.095)	5.03e^-16 (1.06e^-15)*	.308 (.120)	1.57 (.214)	.038 (.038)*
N	500	500	500	500	500	500
R^2	.0932	.0772	.0061	.0442	.0187	.0438

*Not statistically significant estimates ** Statistically significant at 10% level

Table 8. Estimated effects of discipline, paper type and quantitative criteria on the number of citations received.

	(1)	(2)	(3)
MQuant	.953 (.411)	.481 (3.515)*	-6.284 (3.369)**
MQuantSE	.976 (.767)*	-.199 (.373)*	-.332 (.119)
MQual	-.296 (.399)*	.229 (2.541)*	.229 (2.556)*
NoM	-.027 (.299)*	.006 (.041)*	.006 (.041)*
NoMamb	-2.165 (1.549)*	-.331 (1.832)*	-2.742 (2.924)*
Economics	-8.934 (2.967)	-2.955 (6.886)*	-7.717 (8.571)*
Political Science	-3.396 (3.058)*	.263 (6.875)*	-4.128 (8.378)*
Chemistry	-20.195 (2.317)	-18.395 (3.503)	-18.395 (3.523)
Medicine	D	D	D
Empirical	9.740 (3.167)	6.001 (6.923)*	10.219 (8.529)*
Theoretical	8.485 (3.084)	4.125 (6.964)*	10.248 (8.463)*
Mixed	8.395 (3.189)	3.426 (6.975)*	8.047 (8.551)*
Experimental	19.569 (2.570)	18.774 (3.502)	18.774 (3.523)
Econ*Empirical		-2.647 (1.761)*	-1.837 (2.429)*
Econ*Theoretical		D	-2.017 (2.181)*
Econ*Mixed		D	D
Econ*Experimental		-3.144 (4.526)*	3.916 (9.615)*
PolSci*Empirical		D	D
PolSci*Theoretical		1.596 (1.505)*	D
PolSci*Mixed		D	D
PolSci*Experimental		D	D
MQuant*Econ		D	3.450 (1.793)**
MQuant*PolSci		-1.536 (.991)*	D
MQuant*Chem		-.481 (3.515)*	6.285 (3.369)**
MQuant*Med		.773 (3.557)*	7.539 (3.413)
MQuant*Empirical		-.628 (3.533)*	3.661 (3.533)*
MQuant*Theoretical		-1.064 (3.546)*	2.656 (2.853)*
MQuant*Mixed		.369 (3.781)*	6.882 (4.547)*
MQuant*Experimental		D	D

MQuantSE*Econ	D	D
MQuantSE*PolSci	D	D
MQuantSE*Chem	D	D
MQuantSE*Med	1.268 (.891)*	1.401 (.823)**
MQuantSE*Empirical	D	D
MQuantSE*Theoretical	D	D
MQuantSE*Mixed	D	D
MQuantSE*Experimental	D	D
MQual*Econ	-1.123 (3.775)*	-1.606 (2.591)*
MQual*PolSci	-2.227 (3.801)*	-2.552 (2.642)*
MQual*Chem	-.209 (2.541)*	-.209 (2.556)*
MQual*Med	D	D
MQual*Empirical	1.061 (2.836)*	1.497 (1.236)*
MQual*Theoretical	1.287 (2.878)*	1.694 (.481)
MQual*Mixed	-.572 (2.896)*	D
MQual*Experimental	D	D
NoM*Econ	-1.596 (1.254)*	-2.266 (1.937)*
NoM*PolSci	-1.055 (1.252)*	-2.242 (2.121)*
NoM*Chem	D	D
NoM*Med	-.545 (1.036)*	-.545 (1.042)*
NoM*Empirical	1.813 (1.342)*	2.247 (1.939)*
NoM*Theoretical	1.222 (1.280)*	2.304 (2.177)*
NoM*Mixed	1.888 (1.367)*	2.784 (1.964)*
NoM*Experimental	D	D
NoMamb*Econ	-.207 (2.631)*	2.365 (3.155)*
NoMamb*PolSci	D	D
NoMamb*Chem	-1.031 (4.978)*	-21.697 (4.418)
NoMamb*Med	-4.916 (5.804)*	-25.582 (5.341)
NoMamb*Empirical	-.508 (1.328)*	-.025 (1.195)*
NoMamb*Theoretical	.637 (1.408)*	.633 (1.187)*
NoMamb*Mixed	D	D

NoMamb*Experimental	1.389 (4.399)*	24.466 (5.295)
MQuant*Econ*Emp		-.797 (2.087)*
MQuant*Econ*Theo		D
MQuant*Econ*Mix		-3.803 (3.573)*
MQuant*Econ*Exp		D
MQuant*PolSci*Emp		D
MQuant*PolSci*Theo		D
MQuant*PolSci*Mix		D
MQuant*PolSci*Exp		19.779 (7.206)
MQuantSE*Econ*Emp		D
MQuantSE*Econ*Theo		D
MQuantSE*Econ*Mix		D
MQuantSE*Econ*Exp		D
MQuantSE*PolSci*Emp		D
MQuantSE*PolSci*Theo		D
MQuantSE*PolSci*Mix		D
MQuantSE*PolSci*Exp		D
MQual*Econ*Emp		.045 (1.318)*
MQual*Econ*Theo		D
MQual*Econ*Mix		D
MQual*Econ*Exp		.355 (3.874)*
MQual*PolSci*Emp		D
MQual*PolSci*Theo		.430 (2.472)*
MQual*PolSci*Mix		D
MQual*PolSci*Exp		2.369 (3.986)*
NoM*Econ*Emp		D
NoM*Econ*Theo		-.069 (.996)*
NoM*Econ*Mix		D
NoM*Econ*Exp		D
NoM*PolSci*Emp		1.081 (1.278)*
NoM*PolSci*Theo		D

NoM*PolSci*Mix			D
NoM*PolSci*Exp			.763 (2.687)*
NoMamb*Econ*Emp			D
NoMamb*Econ*Theo			D
NoMamb*Econ*Mix			D
NoMamb*Econ*Exp			-25.633 (6.890)
NoMamb*PolSci*Emp			.241 (3.963)*
NoMamb*PolSci*Theo			D
NoMamb*PolSci*Mix			D
NoMamb*PolSci*Exp			D
N	1,000	1,000	1,000
R^2	.3969	.4030	.4053

D: Dropped due to no variation * Not statistically significant estimates ** Statistically significant at 10% level