Listening. Learning. Leading.®

Research Report
ETS RR–12-02

Evaluation of the *e-rater*® Scoring Engine for the *GRE*® Issue and Argument Prompts

Chaitanya Ramineni

Catherine S. Trapani

David M. Williamson

Tim Davey

Brent Bridgeman

February 2012

Evaluation of the *e-rater*® Scoring Engine for the *GRE*® Issue and Argument Prompts

Chaitanya Ramineni, Catherine S. Trapani, David M. Williamson, Tim Davey, and Brent Bridgeman
ETS, Princeton, New Jersey

February 2012

As part of its nonprofit mission, ETS conducts and disseminates the results of research to advance quality and equity in education and assessment for the benefit of ETS's constituents and the field.

To obtain a PDF or a print copy of a report, please visit:

http://www.ets.org/research/contact.html

Technical Review Editor: Donald Powers

Technical Reviewers: Yigal Attali and Shelby Haberman

Abstract

Automated scoring models for the *e-rater*® scoring engine were built and evaluated for the *GRE*® argument and issue-writing tasks. Prompt-specific, generic, and generic with prompt-specific intercept scoring models were built and evaluation statistics such as weighted kappas, Pearson correlations, standardized difference in mean scores, and correlations with external measures were examined to evaluate the e-rater model performance against human scores. Performance was also evaluated across different demographic subgroups. Additional analyses were performed to establish appropriate agreement thresholds between human and e-rater scores for unusual essays and the impact of using e-rater on operational scores. The generic e-rater scoring model with operational prompt-specific intercept for the issue-writing task and prompt-specific e-rater scoring model for the argument writing task were recommended for operational use. The two automated scoring models were implemented to produce check scores at a discrepancy threshold of 0.5 with human scores.

Key words: e-rater, automated essay scoring, GRE analytical writing, automated scoring models

Acknowledgments

The authors wish to thank Yigal Attali, Neil Dorans, Shelby Haberman, Don Powers, and Cathy Wendler for their assistance in interpretation of the results; Jackie Briel, Kathy O'Neill, Fred Robin, Doug Baldwin, Jennifer Bivens-Tatum, and the GRE program for providing the data; and Vincent Weng, Sailesh Vezzu, Scott Davis, Slava Andreyev, and Waverely VanWinkle for their assistance with the data and analyses.

Table of Contents

List of Tables

Page

Overview

The *GRE*® General Test measures verbal reasoning, quantitative reasoning, critical thinking, and analytical writing skills that are not related to any specific field of study. It is a computer-based test composed of three sections: verbal reasoning, quantitative reasoning, and analytical writing. The analytical writing section was introduced in October 2002 and assesses examinee ability to articulate and support complex ideas, analyze an argument, and sustain a focused and coherent discussion—but not specific content knowledge. Test takers are required to write to two separately timed analytical writing tasks: a 45-minute task to present a perspective on an issue and a 30-minute task to analyze an argument. The issue task requires examinees to state an opinion from a certain perspective and support their ideas by use of examples and relevant reasons. The argument task, on the other hand, requires examinees to critique an argument and not necessarily agree or disagree with it.

The GRE added the writing section to its current test format, following the trend of increased use of constructed-response (CR) items within the last decade—assessments such as the *TOEFL*® exam, the *SAT*® exam, and GMAT have added CR (speaking and/or writing) sections. These CR items are believed to measure aspects of a construct that are not adequately addressed through multiple-choice items. However, compared to their multiple-choice counterparts, such items take longer to administer with smaller contributions to reliability per unit time and delay score reporting due to the additional effort and expense typically required to recruit, train, and monitor human raters. Against this backdrop of increasing use of CR items, there is potential value of automated scoring, in which computer algorithms are used to score CR tasks.

Automated scoring systems, in particular systems designed to score a particular type of response that is in relatively widespread use across various assessments, purposes, and populations, can provide a greater degree of construct representation. Examples of automated scoring systems include essay scoring systems (Shermis & Burstein, 2003), automated scoring of mathematical equations (Risse, 2007; Singley & Bennett, 1998), scoring short written responses for correct answers to prompts (Callear, Jerrams-Smith, & Soh, 2001; Leacock & Chodorow, 2003; Mitchell, Russell, Broomhead, & Aldridge, 2002; Sargeant, Wood, & Anderson, 2004; Sukkarieh & Pulman, 2005), and the automated scoring of spoken responses (Bernstein, De Jong, Pisoni, & Townshend, 2000; Chevalier, 2007; Franco et al., 2000; Xi, Higgins, Zechner, & Williamson, 2008; Zechner, & Bejar, 2006). Of these, the domain that has been at the forefront

of applications of automated scoring has been for the traditional essay response, with more than 12 different automated essay evaluation systems available for scoring and/or for performance feedback and improvement of writing quality. The most widely known of these systems include the Knowledge Analysis Technologies (KAT) engine 5 (Landauer, Laham, & Foltz, 2003), *e-rater*® system (Attali, & Burstein, 2006; Burstein, 2003), Project Essay Grade (Page, 1966; 1968; 2003) and IntelliMetric (Rudner, Garcia, & Welch, 2006). Each of these engines targets a generalizable approach to the automated scoring of essays, yet each takes a somewhat different approach to achieving the desired scoring, both through different statistical methods as well as through different formulations of what features of writing are measured and used in determining the score. An explanation of how these systems work is beyond the scope of this paper, except for e-rater, which will be provided later in the paper.

Automated scoring in general can provide performance that approximates some advantages of multiple-choice scoring, including fast scoring, constant availability of scoring, lower per unit costs, reduced coordination efforts for human raters, greater score consistency, a higher degree of tractability of score logic for a given response, and the potential for a degree of performance-specific feedback that is not feasible under operational human scoring. This, in turn, may facilitate allowing some testing programs and learning environments to make greater use of CR items where such items were previously too onerous to support. However, accompanying such potential advantages is a need to evaluate the cost and effort of developing such systems and the potential for vulnerability in scoring unusual or bad-faith responses inappropriately, to validate the use of such systems, and to critically review the construct that is represented in resultant scores.

The purpose of this study was to develop and evaluate e-rater automated scoring models for the GRE issue and argument writing prompts. In particular, this study investigated if e-rater scores could successfully replace one of the two human raters in operational scoring of GRE, thereby effectively reducing the program costs and ensuring fast and consistent score turnaround for the large number of test takers and prospective graduate applicants who take the test year-round at several computer-based test centers in the United States, Canada, and many other countries.

Scoring Rules for GRE Writing Tasks

Under the human scoring process for the GRE program, the writing samples from the tests were distributed to trained raters who assigned a score to each essay using a 6-point holistic scale. The scale reflects the overall quality of an essay in response to the assigned task. Each essay received scores from two trained raters, the scores from the two readings of an essay were averaged and rounded up to the nearest half-point interval (e.g., 3.0, 3.5). If the two assigned scores differed by two or more points on the scale, a third rating was obtained and the final item score was the mean of the three ratings unless the third rating was two or more points on the scale from one of the two initial ratings, in which case the final item score was the mean of the two nearest ratings. If the scores were equidistant, for example, 1, 3, and 5, or 2, 4, and 6, or if any of the ratings was a 0, a more experienced rater was approached for a final score. The final scores on the two essays were then averaged and rounded up to the nearest half-point interval and a single score was reported for the test taker's performance on the analytical writing section. If the test taker wrote an essay for only one of the two tasks, he/she received a score of zero on the task for which no response was provided; whereas, if a test taker did not write to either of the two tasks, an NS (no score) was reported for the analytical writing section. A complete GRE scoring guide is included in Appendix A.

Automated Scoring With the e-rater Scoring Engine

The computer program, e-rater, scores essays primarily on the basis of features that are related to writing quality. The initial version of e-rater (Burstein, Kukich, Wolff, Lu, & Chodorow, 1998) used more than 60 features to assess quality of writing in written assessments. In e-rater v2 (Attali & Burstein, 2006), the features were combined into a smaller set of features intuitively linking them to general dimensions of writing quality for scoring. This set of features is constantly refined and enhanced in newer versions of e-rater, with e-rater v11.1 currently in operation. The e-rater program primarily emphasizes the characterization of writing quality rather than the content discussed in the essay, although some content features can be used in the scoring. It uses natural language processing (NLP) technology to evaluate a number of characteristics of the essay, including grammar, usage, mechanics, development, and other features. These characteristics of essay quality are used to derive a prediction of the score that a human rater would have provided for the same response.

Features. E-rater uses 11 score features, with nine representing aspects of writing quality and two representing content. Most of these primary scoring features are composed of a set of subfeatures computed from NLP techniques, and many of these have multiple layers of microfeatures that have cascaded up to produce the subfeature values. An illustration of the construct decomposition of e-rater resulting from this structure is provided in Appendix B, where the features encapsulated in bold are the independent variables in the regression and the other features are an incomplete illustrative listing of subfeatures measuring aspects of writing quality. The scoring features and subfeatures of e-rater have been mapped to the 6-trait model (Culham, 2003), commonly used to evaluate writing by teachers, by Quinlan, Higgins, and Wolff (2009). A glossary of all the microfeatures is included in Appendix C.

Grammar, usage, mechanics, and style together identify over 30 error types, including errors in subject-verb agreement, homophone errors, misspelling, and overuse of vocabulary. These error types are summarized for each feature as proportions of error rates relative to the essay length. Organization and development features are based on automatically identifying sentences in an essay as they correspond to essay-discourse categories: introductory material (background), thesis, main ideas, supporting ideas, and conclusion. For the development feature, e-rater evaluates general essay development by identifying how many discourse elements are present for each category of discourse in an essay. For the organization feature, e-rater computes the average length of the discourse elements (in words) in an essay. Lexical complexity of the essay is represented by two features. The first is computed through a word frequency index used to obtain a measure of vocabulary level. The second feature computes average word length across all words in the essay and uses this as an index of sophistication of word usage. A new feature indicative of correct use of collocation and preposition use in the essay was included in e-rater version 10.1 to support further development of measures of positive attributes of writing style and ability (Ramineni, Davey, & Weng, 2010).

Two prompt-specific (PS) vocabulary usage features relate to content of vocabulary used in the essay. Both features are based on the tendency to use words typical of those used in prior essays. The first feature indicates the score point level to which the essay text is most similar with regard to vocabulary usage. The second analyzes the similarity of essay vocabulary to prior essays with the highest score point on the scale. These were revised in the previous version to include information for all score points in computing the two measures (Attali, 2009).

Scoring models for e-rater. Developing e-rater scoring models is typically a two-stage process: (a) model training/building and (b) model evaluation. Data are split into a model building set and an evaluation set. Training/building of an e-rater model is a fully automated process, given a properly constituted set of training essays in the model building set.

A properly constituted set of training essays includes a random sample of responses that must have been entered on the computer and should be representative of the population for which e-rater is intended for use. Prior to model build, the selected essay set is subjected to advisory flag analyses.

A number of advisory flags (acting as filters) have been established that indicate when a specific essay is inappropriate for automated scoring. Each advisory flag marks a different problem because of which an essay would be identified as inappropriate for automated scoring. The use of these flags for an assessment is evaluated by comparing when e-rater considers an essay inappropriate versus when a human rater considers an essay inappropriate or off topic. All advisories are evaluated individually as well as combined. That is, individual advisories for which e-rater is found to effectively (on par with humans) identify essays that are inappropriate for automated scoring are combined sequentially and subjected to a similar evaluation against human markings. This process of advisory flag analyses helps determine which group of advisories aid e-rater in effectively screening for inappropriate essays and should be included as part of the operational e-rater framework for an assessment. Subjecting the sample of essays to advisory flagging prior to model build improves quality of model build by filtering the inappropriate essays from going into the model build phase for e-rater.

Advisory flags for e-rater are coded depending on the type of issue(s) identified. Table 1 lists the names, a brief description, and binary codes for all the advisory flags. An essay can be flagged for single or multiple issues. For instance, if an essay contains repetition of words, the flag will be set to 2 (reuse of language). However, if an essay contains repetition of words and is not relevant to the assigned topic, the flag will be set to 10, i.e. 2 (reuse of language) + 8 (not relevant). Flags 64 (too brief) and higher force the engine to assign a score of 0, while the other flags are provided as warnings.

If no severe advisory flags that would preclude automated scoring were issued, the e-rater program uses NLP technology to evaluate a number of characteristics of the essays in the model build set, including grammar, usage, mechanics, development, and other features. After the

Table 1

Advisory Flag Code, Name, and Description

Advisory flag code	Flag name	Flag description
2	Reuse of language	Compared to other essays written on this topic, the essay contains more reuse of language, a possible indication that it contains sentences or paragraphs that are repeated.
4	Key concepts	Compared to other essays written on this topic, the essay shows less development of the key concepts on this topic.
8	Not relevant	The essay might not be relevant to the assigned topic.
16	Restatement	The essay appears to be a restatement of the topic with few additional concepts.
32	No resemblance	The essay does not resemble others that have been written on this topic, a possible indication that it is about something else or is not relevant to the issues the topic raises.
64	Too brief	The essay is too brief to evaluate.
128	Excessive length	The essay is longer than essays that can be accurately scored and must be within the word limit to receive a score.
256[a]	Unidentifiable organizational elements	The essay could not be scored because some of its organizational elements could not be identified.
512	Excessive number of problems	The essay could not be scored because too many problems in grammar, usage, mechanics, and style were identified.
1024[b]	Unexpected topic	The essay appears to be on a subject that is different from the assigned topic.
2048[b]	Nonessay	The text submitted does not appear to be an essay.

[a]Introduced only after GRE evaluation. [b]Not applicable for the GRE program.

feature values are derived, the weights for the features are determined using a multiple regression procedure. These feature weights can then be applied to additional essays to produce a predicted score based on the calibrated feature weights. Because the feature weights are estimated so as to maximize agreement with human scores, any evaluation based on the training sample will tend to

overstate a scoring model's performance. However, a more appropriate measure of performance can be obtained by applying the model to the independent evaluation sample. Subsequently, the feature scores and weights are applied to samples of essays in the evaluation set to produce an overall e-rater score and validate the model performance. In general, model performance will appear slightly degraded in this sample in comparison to the training sample. Models are evaluated and recommended for operational use if the results of automated scoring are comparable with agreement between two human raters.

The regression-based procedure of using NLP-based features to derive the automated score within e-rater lends itself to multiple methods of model construction. The following model types were built for the GRE data:

Prompt-specific (PS). These are custom built models for each prompt in the item pool. They are designed to provide the best fit models for the particular prompt in question, with both the feature weights and the intercept customized for the human score distribution used to calibrate the prompt model. Prompt-specific models incorporate PS vocabulary related content features into the scoring.

Generic (G). The smaller set of features derived in e-rater v2 enabled use of a single scoring model, referred to as generic, and standards across all prompts of an assessment. Generic models are based upon taking a group of related prompts, typically 10 or more, and calibrating a regression model across all prompts so that the resultant model is the best fit for predicting human scores for all the prompts, taken as a whole. As such, a common set of feature weights and a single intercept are used for all prompts regardless of the particular prompt in the set. Generic models do not take into account the content of the essay and address only writing quality; content features related to the vocabulary usage are prompt specific and therefore not included in the regression. The generic modeling approach has the advantage of requiring smaller sample sizes per prompt (with enough prompts) and a truly consistent set of scoring criteria regardless of the prompt delivered operationally.

Generic with prompt-specific intercept (GPSI). These models are produced by first producing a fully generic model as described above but then adjusting the model for each prompt so that the intercept of the regression matches the human score mean for the particular prompt. The result is a set of prompts for which the feature weights in the regression, and therefore the scoring criteria, are constant across prompts but the intercept allows for scaling of scores to

reflect minor differences in difficulty of the prompt that may have been captured in the human scoring process. This result allows combining sample efficiency of G models with optimization of score scales from PS models. Like the fully generic model, it does not consider content in scoring and provides for reduced sample sizes per prompt with sufficient number of prompts for generic model calibration.

Evaluation criteria. Once the automated (e-rater) scores for all essays have been calculated, ETS uses certain evaluation criteria to assess the quality of the models. There are guidelines for performance that are applied to the independent evaluation sample used to validate the scoring models. The results on the evaluation sample independent from the model-building sample represent a more generalizable measure of performance that would be more consistent with what would be observed on future data. The criteria are as follows:

Construct evaluation. Automated scoring capabilities, in general, are designed with certain assumptions and limitations regarding the tasks they will score. Therefore, the initial step in any prospective use of automated scoring is the evaluation of fit between the goals and design of the assessment (or other use of automated scoring) and the design of the capability itself. The process includes a comparison of the construct of interest with that represented by the capability, review of task design, review of scoring rubric, review of human scoring rules, review of score reporting goals, and review of claims and disclosures.

Association with human scores. Absolute agreement of automated scores with human scores has been a long-standing measure of the quality of automated scoring. Although it is common to report absolute agreements as percentages of cases being exact agreements and exact-plus-adjacent agreements, in evaluation of e-rater for assessment these are only reported in statistical analysis reports as conveniences for laypersons rather than as part of acceptance criteria due to scale dependence (values will be expected to be higher by chance on a four-point scale than on a six-point scale) and sensitivity to base distributions (tendencies of human scores to use some score points much more frequently than others). Instead, the absolute agreement of automated scores with their human counterparts is typically evaluated on the basis of quadratic-weighted kappa and Pearson correlations. Typically, the quadratic-weighted kappa between automated and human scoring must be at least 0.70 (rounded normally). This value was selected on the conceptual basis that it represents the “tipping point” at which signal outweighs noise in the prediction. The identical threshold of 0.70 has been adopted for Pearson correlations. It

should be noted that the results from quadratic-weighted kappa and Pearson correlations are not identical as kappa is computed on the basis of values of e-rater that are rounded normally to the nearest scale score point while the correlation is computed on the basis of unrounded values (e-rater scores are provided unrounded so that when multiple prompts are combined for a reported score the precise values can be combined and rounded at the point of scaling rather than rounding prior to summation). It is worthwhile to note that since e-rater is calibrated to empirically optimize the prediction of human scores, the expected performance of e-rater against this criterion is bounded by the performance of human scoring. That is, if the inter-rater agreement of independent human raters is low, especially below the 0.70 threshold, then automated scoring is disadvantaged in demonstrating this level of performance not because of any particular failing of automated scoring, but because of the inherent unreliability of the human scoring upon which it is both modeled and evaluated. Therefore, the inter-rater agreement among human raters is commonly evaluated as a precursor to automated scoring modeling and evaluation.

Degradation. Another criterion of performance in relationship with human scores recognizing the inherent relationship between the reliability of human scoring and the performance of automated scoring is degradation. The e-rater/human scoring agreement cannot be more than 0.10 *lower*, in either weighted kappa or correlation, than the human/human agreement. This standard prevents circumstances in which automated scoring may reach the 0.70 threshold but still be notably deficient in comparison with human scoring. It should be noted that in practice, occasionally cases are observed in which the e-rater/human agreement for a particular prompt has been slightly less than the 0.70 performance threshold but very close to a borderline performance for human scoring (e.g., an e-rater/human weighted kappa of 0.68 and a human/human kappa of 0.71), and such models have been approved for operational use on the basis of being highly similar to human scoring and consistent with the purpose of the assessment for which they are used. Similarly, it is common to observe e-rater/human absolute agreements that are *higher* than the human/human agreements for prompts that primarily target writing quality.

Standardized mean score difference. A third criterion for association of automated scores with human scores is that the standardized mean score difference (standardized on the distribution of human scores) between the human scores and the e-rater scores cannot exceed

0.15. This standard ensures that the distribution of scores from automated scoring is centered on a point close to what is observed with human scoring in order to avoid problems with differential scaling.

***Association with external variables*.** Problems and concerns with human scoring represent a range of potential pitfalls including halo effects, fatigue, tendency to overlook details, and problems with consistency of scoring across time (Braun, 1988; Daly & Dickson-Markman, 1982; Hales & Tokar, 1975; Hughes & Keeling, 1984; Hughes, Keeling & Tuck, 1980a, 1980b, 1983; Lunz, Wright, & Linacre, 1990; Spear, 1997; Stalnaker, 1936). Therefore, it is of relevance to investigate more than just the consistency with human scores and to also evaluate the patterns of relationship of automated scores, compared to their human counterparts, with external criteria. Scores on other test sections to examine within-test relationships and external criteria such as self-reported measures that may be of interest (e.g., grades in English class, academic majors) are some examples that are used for this purpose. It should be noted that the external criteria that are typically available are not a direct external measure of exactly the same construct and hence often pose some problems for interpretation.

***Subgroup differences*.** In evaluating fairness of automated scoring the question is whether it is fair to subgroups of interest to substitute a human rater with an automated score. Due to lack of a suitable differential item functioning measure for this purpose, two approaches have been proposed and implemented to address measures of fairness for e-rater. The first is extending the flagging criterion of standardized mean score differences from the prompt-level analysis discussed above to the evaluation of subgroup differences. A more stringent threshold of performance has been adopted, setting the flagging criteria at 0.10, and is applied to all subgroups of interest to identify patterns of systematic differences in the distribution of scores between human scoring and automated scoring for subgroups at the reported score level.

The second approach is examination of differences in the predictive ability of automated scoring by subgroup. This consists of two classes of prediction that are likewise related to the standards and processes discussed above. First is to compare an initial human score and the automated score in their ability to predict the score of a second human rater by subgroup. The second type of prediction is comparing the automated and human score ability to predict an external variable of interest by subgroup.

***Operational impact analysis*.** The final stage of the evaluation of automated scoring is the determination of predicted impact on the aggregate reported score for the writing section. This impact is evaluated by simulating the score that would result from substituting an automated score for a human score and determining the distribution of changes in reported scores that would result from such a policy. The result lends an additional opportunity to compare the performance of scoring under the proposed model (automated and human) to that of the traditional model (two human raters). In the empirical comparison, the primary areas of interest are an examination of the rate and degree of raw and scaled score differences resulting from the change, the differences in association of reported scores to other test scores and external criteria, and both of these applied to the level of subgroups of interest. Such an analysis allows for the consideration of issues in scale continuity and other factors that may bear on the decision to implement automated scoring.

Variations in agreement threshold. Alternative thresholds are considered for the definition of discrepancy when evaluating the operational agreement between automated and human scores. In human scoring, it is common practice for most scoring scales in high-stakes programs that use double human scoring to consider scores that are one point apart (e.g., one rater issuing a 3 and the other a 4) to be in agreement under the interpretation that reasonable judges following the rubric may differ, especially when evaluating a borderline submission. Typically, when two human scores are considered discrepant, an adjudication process occurs in which additional human raters are used and a resolution process is followed to determine the final reported score. These adjudication and resolution processes vary substantially by program and are sometimes conditional on the particular distribution of initial human scores produced. In the implementation of automated scoring with precise values recorded (decimal values), a wider range of options is available for defining agreement, each of which has implications for the extent to which the results of automated scoring influence the final reported scores and therefore the ultimate evaluation of impact under the procedures defined above.

Methods

Data

More than 750,000 operational responses across 113 issue prompts and 139 argument prompts were drawn from the available test records from September 2006 to September 2007. This resulted in roughly 3,000 essays per prompt. Along with the two human rater scores for

each essay, several additional variables were included for analysis—examinee background variables (gender, ethnicity, test center country, undergraduate overall and major grade point average, English as their best language) and other GRE section test scores.

The quality of the e-rater models estimated and the effective functioning of the models in operational settings depend critically on the nature and quality of the training and evaluation data. Thereby, the automated scoring group at ETS has developed certain guidelines to use in the collection and analyses of the data for building and evaluation of automated scoring models (Williamson & Davey, 2007). These guidelines include choosing a representative sample, double scored essays in electronic format, and sufficient number of prompts and sample size for model building. For the assumptions not met, there are subsequent implications when interpreting the results. The data provided by the GRE program met all the guidelines for automated scoring model building and evaluation.

For evaluations, e-rater v7.2 was used. This version of e-rater had ten features (excluding the new positive measure on the use of collocations and prepositions) and the content features used information only from one score point (unlike the revised content features that derive information from all five score points). At the subfeature level, double negation and preposition errors under usage, and good collocation density as well as good preposition usage under positive feature, were not present in v7.2. However, it should be noted that during the annual engine upgrade process each year, new models are built and evaluated using the latest e-rater version for all high- and low-stakes assessments that use e-rater for operational scoring.

Construct Relevance

The construct of GRE assessment was evaluated against the construct represented by e-rater as part of a previous study (Quinlan et al., 2009). Under analytic scoring framework, e-rater's feature categories were mapped by Quinlan et al. (2009) to the 6-trait scoring model (Culham, 2003) that focuses on the dimensions of ideas and content, organization, voice, word choice, sentence fluency, and conventions. The two GRE writing tasks require test takers to present an insightful position on an issue or develop an argument with compelling reasons. These ideas and content are measured by e-rater primarily by two features using content vector

analysis. The features measure topic-specific vocabulary use only, and therefore the breadth of construct coverage is limited. However, they do a fairly reasonable job of measuring this limited domain. The GRE writing assessment demands a well-focused, well-organized analysis representing a logical connection of ideas that is measured by the organization/development features of e-rater. The organization and development features measure the number and average length of discourse units (i.e., functionally related segments of text) in an essay and correlate strongly with the essay length. In addition, the GRE writing tasks elicit fluent and precise expression of ideas using effective vocabulary and sentence variety. These traits are represented in e-rater by a variety of microfeatures that measure sentence-level errors (e.g., run-on sentences and fragments) and grammatical errors (e.g., subject-verb agreement) and also the frequency with which the words in an essay are commonly used. The GRE rubric also emphasizes test takers' abilities to demonstrate facility with conventions (i.e., grammar, usage, and mechanics) of standard written English. This trait in particular is well represented in e-rater by a large selection of microfeatures that measure errors and rule violations in grammar, usage, mechanics, and style.

The review of task design, scoring rubric, human scoring rules, reporting goals, and claims and disclosures for the assessment were made in conjunction with the GRE program as the study progressed.

Model Building and Evaluation

The PS, G, and GPSI scoring models were built and evaluated for the GRE data from the year ranging from September 2006 to September 2007 using e-rater v7.2.

Agreement statistics for automated scores with human scores were computed for all e-rater models built and evaluated for the GRE data. The best chosen model(s) was then subjected to remaining evaluation criteria of association with external variables, subgroup differences, operational impact analysis, and agreement thresholds for adjudication.

The following section presents the results for each scoring model type developed/evaluated for the two prompt types (issue and argument). The results for each model are supported with summary tables of performance at the aggregate level in the main text and summary tables of performance at the prompt level in Appendix F.

Results

Advisory Analyses

A number of advisory flags are used to indicate when e-rater is inappropriate for scoring a specific essay response. The use of these flags as effective filters was evaluated as described earlier in the paper under the process for building and evaluating e-rater scoring models. All advisories were evaluated against human1 (H1) markings individually, as well as combined, and the results for these evaluations are presented in Appendix E.

Based on the analyses reflecting e-rater's performance to human rater in effectively identifying an essay inappropriate or off-topic for automated scoring, following advisories were turned on for the GRE writing assessment to filter the responses adequately prior to e-rater model building:

- Advisory 2—Repetition: essay contains more repetition of words and phrases than other essays written for the prompt (not used for the issue prompt type)
- Advisory 8—Not relevant: essay might not be clearly relevant to the topic, compared to other essays written for the prompt
- Advisory 64—Too brief: essay is too brief for e-rater to issue a valid score (less than or equal to 2 sentences, or fewer than 25 words)
- Advisory 128—Excessive length: essay is too long for e-rater to issue a valid score (greater than 1000 words)
- Advisory 512—Excessive number of problems: essay with a very high number of errors in grammar, usage, and mechanics.

The combination of the selected advisories for the two writing tasks resulted in successful filtering of 96% of the responses on the issue prompt type that received a human score of 0 out of the set of cases to be sent to e-rater for scoring, thus diverting them to double human scoring. For responses on argument prompt type, 93% of the responses that received a human score of 0 were successfully filtered using this approach. The use of these rules overall flagged a very small number of cases (about 1% for issue prompts and about 3% for argument) requiring double human scoring. Tables 2 and 3 show the results for flagging rates for the two writing tasks. From these two tables it can be seen that the majority of flagging that requires double human scoring

occurs at the lower end of the scale regardless of the prompt type. However, more argument essays are flagged than issue essays.

Table 2

Flagging Rates for the Issue-Writing Prompts

Human score	No flag	Flag	% flagged	Row sum
0	26	569	96	595
1	2,565	128	5	2,693
2	18,702	334	2	19,036
3	75,440	839	1	76,279
4	121,142	1,092	1	122,234
5	62,530	482	1	63,012
6	14,015	118	1	14,133
Total	294,420	3,562	1	297,982

Note. Decimal values for percent flagged were rounded up.

Table 3

Flagging Rates for the Argument Writing Prompts

Human score	No flag	Flag	% flagged	Row sum
0	57	561	93	618
1	4,516	787	15	5,303
2	40,856	2,939	7	43,795
3	89,878	3,063	3	92,941
4	121,860	1,918	2	123,778
5	71,639	1,302	2	72,941
6	18,486	560	3	19,046
Total	347,292	11,130	3	358,422

Note. Decimal values for percent flagged were rounded up.

Traditionally, the essay length limit for e-rater scoring was set to 800 words. During the above advisory analyses for individual flags, however, it was observed that for Flag 128 (too long), a substantially large number of essays were being identified as too long and as a consequence being directed away from automated scoring. For the issue-writing task, which was timed for 45 minutes, a substantial number of responses were greater than 800 words (3% of the total responses). Most of these longer essays were appropriately in the higher score category on the scale. Tables 4 and 5 show the distribution of the essays in the sample data across various score categories. Of the essay responses, 81% and 92% exceeding 800 words for issue and argument tasks respectively were found to be in the range of 800–1,000 words; of these, 35% for issue and 74% for argument tasks respectively belonged to the highest score category of 6. As a result, the word limit for e-rater was appropriately increased to 1,000 words for GRE writing tasks and also for all essay topics timed for 45 minutes in *Criterion*® online writing evaluation service (a web-based application of e-rater).

Table 4

Distribution of Essays for Issue-Writing Prompts at Various Score Points

Score category	Number of words Frequency (percentage)	
	800 ≤ 1,000	≥ 1,000
1	4 (<1)	1 (<1)
2	26 (<1)	6 (<1)
3	218 (2)	42 (<1)
4	1,054 (11)	174 (2)
5	2,993 (32)	478 (5)
6	3,237 (35)	1,029 (11)
Total	7,532 (81)	1,730 (19)

Note. Frequency was rounded to integers when greater than 1.

Model Build and Evaluation

The PS, G, GPSI scoring models were built for both issue and argument tasks. There were 10 features in total for e-rater as described earlier. The two content features related to topic-specific vocabulary usage are included only for PS models. Any features with negative weights are excluded from the final model build. Hence, the feature set for PS models could vary from prompt to prompt. The G and GPSI models for both issue and argument prompts included all e-

rater features (except for the two content features related to topic-specific vocabulary) in the final model build. The sample size was 500 for the model build set for all model types, and the remaining number of responses for each prompt determined the sample size for the evaluation set. The sample size for the evaluation set for each prompt can be found in the tables reporting results for each model at the prompt level in Appendix F.

Table 5

Distribution of Essays for Argument Writing Prompts at Various Score Points

Score category	Number of words Frequency (percentage)	
	800 ≤ 1,000	≥ 1,000
1	0 (0)	0 (0)
2	9 (1)	0 (0)
3	11 (1)	0 (0)
4	30 (4)	2 (<1)
5	90 (12)	5 (<1)
6	564 (74)	50 (7)
Total	704 (92)	57 (8)

Note. Frequency was rounded to integers when greater than 1.

Agreement With Human Scores

The quality of automated scoring models rests on the characteristics of the human scoring used as the basis for modeling. Evaluation of the differences in raw scores under human/e-rater (H1/e-rater) scoring compared to human/human (H1/H2) scoring was conducted. Tables 6 and 7 show results for quadratic-weighted kappas, Pearson correlations, standardized mean score differences, and degradation of e-rater/human agreement from human/human agreement for issue and argument prompts respectively. A summary of the flagging criteria and conditions for evaluating model performance, explained under the evaluation criteria previously, is included in Appendix D. It should be noted that all the threshold values are evaluated to four decimal places for flagging purposes. For the operational GRE, there was a correlation of 0.74 and 0.78 for scores by human raters on responses to issue and argument prompts respectively.

Scores from e-rater were highly similar to human scoring, when aggregated over all prompts. The agreement between human and automated scoring across different e-rater models

Table 6

Agreement With Human Scores for Issue Prompts

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Model	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
G	2,070	3.85	0.96	3.86	0.96	0.00	0.42	0.74	59	98	0.74	3.85	0.98	0.42	0.76	59	98	3.85	0.95	0.00	0.79	0.01	0.05
GPSI	2,070	3.85	0.96	3.86	0.96	0.00	0.42	0.74	59	98	0.74	3.85	0.98	0.42	0.76	59	98	3.85	0.95	0.00	0.79	0.02	0.05
PS	2,070	3.85	0.96	3.86	0.96	0.00	0.42	0.74	59	98	0.74	3.83	1.00	0.44	0.77	60	99	3.82	0.96	-0.03	0.80	0.03	0.06

Note. N is average across all the prompts. adj = adjacent, G = generic, GPSI = generic with prompt-specific intercept, H1 = Human 1, H2 = Human 2, PS = prompt-specific, std diff = standardized difference, wtd = weighted.

Table 7

Agreement With Human Scores for Argument Prompts

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Model	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
G	2,070	3.76	1.11	3.76	1.11	0.00	0.44	0.78	58	97	0.78	3.77	1.10	0.35	0.73	52	94	3.76	1.08	0.00	0.76	-0.06	-0.03
GPSI	2,070	3.76	1.11	3.76	1.11	0.00	0.44	0.78	58	97	0.78	3.76	1.10	0.36	0.73	52	95	3.76	1.08	0.00	0.76	-0.05	-0.03
PS	2,070	3.76	1.11	3.76	1.11	0.00	0.44	0.78	58	97	0.78	3.70	1.12	0.37	0.76	53	96	3.69	1.10	-0.06	0.78	-0.03	0.00

Note. N is average across all the prompts. adj = adjacent, G = generic, GPSI = generic with prompt-specific intercept, H1 = Human 1, H2 = Human 2, PS = prompt-specific, std diff = standardized difference, wtd = weighted.

compared to the agreement between human readers was at par for argument prompts with a correlation of 0.79, and even slightly better for issue prompts with a correlation of 0.78.

All three types of e-rater scores from different scoring models showed similar weighted kappas (0.73–0.77) and correlations (0.76–0.80) with human scores for both issue and argument prompts, which met the evaluation criterion of correlation and weighted kappa greater than 0.70 and was higher than what was observed for the two human scores (0.76 on average). For the issue prompts, the threshold for both weighted kappa and correlation was met at the prompt level as well, however, 13 of the argument prompts under the G model and 11 of the argument prompts under the GPSI model failed to meet the 0.70 threshold for weighted kappa.

The degradation of e-rater/human agreement from human/human agreement met the evaluation criteria (less than 0.10 decrease in weighted kappa and correlation) at the overall level for both issue and argument prompts. In fact, the e-rater/human agreement was higher (on average 0.02 for weighted kappa and 0.06 for correlation) than human/human agreement for issue prompts reflecting an improvement in agreement (denoted by a positive sign in Table 4). There was slight degradation in e-rater/human agreement from human/human agreement for argument prompts (on average 0.05 for weighted kappa and 0.02 for correlation) but well below the set evaluation criterion for degradation. At the prompt level, however, for the argument task, 17 prompts under the G model and 9 prompts under the GPSI model exceeded the minimal degradation threshold.

The standardized score differences between e-rater and human scores were 0.01 on average for the issue prompts and 0.02 on average for the argument prompts, both well under the acceptable limit of 0.15 of a standard deviation of the human score distribution. At the prompt level, however, 4 prompts for issue task and 37 prompts for argument task failed to meet the 0.15 threshold for standardized mean difference under the G model.

Based on the results for the evaluation criteria at the aggregate and the prompt level for the three e-rater models, GPSI and PS models were chosen as the best scoring models for issue and argument writing prompts respectively.

Association With External Measures

Human scores and e-rater scores were correlated with external measures such as scores on other test sections (GRE verbal and quantitative sections), undergraduate grade point average (overall and major; self-reported letter grades were number coded), and English as the best

language. English was coded as the best language if an examinee self-reported that he or she communicated better or equally well in English than any other language. Table 8 reports the association of e-rater scores (rounded integer values from the chosen model for issue and argument prompts) and human scores at rating level with these external measures.

Table 8

Score Association With Other Measures

	GRE Verbal	GRE Quantitative	Under-graduate grade point average	Under-graduate grade point average–major	English as the best language
Issue					
Human 1	0.51	0.07	0.13	0.15	0.27
e-rater	0.51	0.13	0.17	0.17	0.24
Argument					
Human 1	0.55	0.22	0.20	0.18	0.19
e-rater	0.57	0.24	0.22	0.20	0.20

Correlations between e-rater scores and the external measures were generally higher than for human scores, with the exception of the correlation between human score for issue prompts and English as the best language. Therefore, using e-rater for scoring was determined to be appropriate based on these criteria.

Subgroup Differences

Analyses were conducted estimating the degree to which e-rater and human scores differ across subgroups. For example, whether males or females receive higher e-rater scores relative to their human scores or whether test takers from different countries receive differential scores from e-rater. In general, if the human scores are accepted as the optimal desired score, standardized mean score differences of 0.05 or less are desirable for subgroups and those between 0.05 and 0.10 in magnitude may be considered acceptable. Differences across subgroups based on gender, ethnicity, test center countries (domestic versus international as well as some specific countries of interest), and some other variables of interest were examined. None of the subgroups revealed any substantial differences except for the country of China (difference as large as 0.60 for issue prompts with greater e-rater scores) and African American test takers in the United States (difference as large as 0.18 for argument prompts with lower e-rater scores). Tables 9 and 10

show the results for quadratic-weighted kappas, Pearson correlations, standardized mean score differences, and degradation of e-rater/human agreement from human/human agreement for the test takers from China and for African American test takers in the United States respectively on both the issue and the argument prompts. For subgroups with small sample sizes (less than 1,000), any differences around or beyond the threshold were discarded from further formal review. The *N* reported in these tables is the average number of examinees per prompt. Results for subgroups based on gender, ethnicity (other than African American), and test center countries (other than China) of interest are included in Appendix G. Further examination across subgroups based on ability level and undergraduate major field revealed no significant differences.

Models for Implementation

Initially e-rater was proposed as a contributory score in conjunction with one human rating in determining the final score for a writing task. Under the contributory model, the mean of the e-rater score and the human rating yields the final score on a writing task. This score is consistent with the implementation approach adopted by GMAT in the past. However, under such a model it must be acknowledged that the construct measured in e-rater may be somewhat different than that measured by human raters for prompts that emphasize the content of the response in the rubric—at least to the extent that cognition of human scoring is known.

The allowable discrepancy threshold between the two human scores on a GRE writing task is 1 point. Scores discrepant by more than 1 point (that is, apart by 2 or more points as outlined previously under GRE scoring rules) are routed to a third human rater. Since e-rater produces real values, unlike human scores which are restricted to integer values, scores greater than 1 but less than equal to 1.4999 are rounded down to 1 under normal rounding rules. Hence, adhering to the GRE scoring rules, a contributory model at threshold of 1.5 was initially chosen for evaluating the impact of including e-rater in operational scoring for GRE writing tasks. However, upon discovering subgroup differences under the chosen e-rater models on the two writing tasks, alternate model implementations with different thresholds were proposed to ensure that the presence of any differences did not adversely affect the reported scores. Smaller discrepancy thresholds in increments of 0.25 (1.25, 1.0, 0.75, 0.5) were evaluated to increase sensitivity to discrepant cases while using e-rater for scoring and thereby control subgroup differences between e-rater and human scores at the writing score level. As a result of these

Table 9

Agreement With Human Scores on Issue and Argument Prompts for Test Takers From China

	H1 by H2											H1 by e-rater (rounded to integers)							H1 by e-rater (unrounded)				Degradation	
	H1			H2								e-rater							e-rater				Wtd kappa	*R*
	N	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
Issue	85	3.29	0.77	3.29	0.77	0.01	0.16	0.39	50	93	0.40	3.74	0.75	0.14	0.39	41	92	3.74	0.70	0.60	0.50	0.00	0.11
Argument	83	3.63	0.85	3.62	0.85	-0.01	0.20	0.43	47	92	0.44	3.82	0.76	0.19	0.46	46	94	3.82	0.70	0.23	0.53	0.03	0.09

Note. Shaded cells indicate values that fail to meet the thresholds listed in Appendix D. adj = adjacent, H1 = Human 1, H2 = Human 2, std diff = standardized difference, wtd = weighted.

Table 10

Agreement With Human Scores on Issue and Argument Prompts for African American Test Takers in the United States

	H1 by H2											H1 by e-rater (rounded to integers)							H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater							e-rater				Wtd kappa	*R*
	N	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
Argument	128	3.30	1.04	3.30	1.04	0.00	0.49	0.79	63	98	0.79	3.14	1.15	0.32	0.72	49	95	3.12	1.16	-0.18	0.76	-0.07	-0.03
Issue	131	3.68	0.86	3.68	0.86	0.00	0.43	0.71	62	99	0.71	3.60	0.97	0.42	0.74	61	99	3.59	0.95	-0.10[a]	0.79	0.03	0.07

Note. Shaded cells indicate values that fail to meet the thresholds listed in Appendix D. adj = adjacent, H1 = Human 1, H2 = Human 2, std diff = standardized diff, wtd = weighted.

[a]Value is less than 0.1000 before rounding, therefore not flagged.

investigations it was determined that the 0.5 threshold was the optimal level for discrepancy thresholds in operational practice as it ensured no subgroups were flagged for differences in score.

As a more conservative approach, *check score* or a *confirmatory score* model was identified as a potential alternative implementation of automated scoring. Under this particular model, it was proposed that the e-rater score be used only to check or confirm the human score, and when within the allowable discrepancy threshold, the human rating would constitute the final score for the examinee on a given writing task. Thus each response would get only one score, unless identified as discrepant and a second human rating was requested.

The GRE program preferred the check score model at a threshold of 0.5 and selected this approach for implementation. Table 11 reports the correlations of final scores for the analytical writing section simulated under the check score model at 0.5 threshold with other measures. Compared to the current operational writing score produced using two or more human ratings, the new simulated writing scores showed equal or slightly better association with scores on other GRE sections, undergraduate and major grade point averages, and examinee English ability. There were no subgroup differences of formal concern under this model (Table G3).

Table 11

Reported Score Association With Other Measures Under Check Score Model for e-rater at 0.5 Threshold

	GRE Verbal	GRE Quantitative	Under-graduate grade point average	Under-graduate grade point average–major	English as the best language
New simulated writing score	0.62	0.19	0.22	0.21	0.26
Operational writing score	0.62	0.17	0.20	0.20	0.27

Impact of Implementation

The rates of agreement and the anticipated number of second human ratings for scores based on all human scoring and scores based on one human with e-rater as check score were compared. Table 12 presents the rates of agreement and anticipated number of third ratings (adjudication) when using all human raters versus when using e-rater with humans. For two

human scores, the third rating will be provided by a third human rater when the human scores differ by 2 or more points. For one human with e-rater as check score, the third rating will be provided by a second human rater when the human and e-rater scores differ by 0.5 points or more for both issue and argument writing tasks. Results showed that when using e-rater, roughly 41% cases for issue and 47% cases for argument will need more than one human score, which suggested substantial savings in the operational costs associated with using a second human rater.

Table 12

Change in Agreement and Adjudication Rates for Issue and Argument Writing Prompts Using e-rater Check Score Model at 0.5 Threshold

	Two ratings (no adjudication needed)	Anticipated third ratings (adjudication needed)
Issue	*N* (%)	*N* (%)
Operational scoring with all humans, adjudication at 2 points	129,513 (98%)	2,891 (2%)
Human 1–e-rater, adjudication at 0.5 points	78,772 (59%)	53,632 (41%)
Argument		
Operational scoring with all humans, adjudication at 2 points	128,417 (97%)	3,987 (3%)
Human 1–e-rater, adjudication at 0.5 points	70,548 (53%)	61,856 (47%)

Note. Occasionally more than three ratings are required for a very small percentage (< 0.5) of cases and are collapsed in this category.

As described under the scoring rules for GRE writing task, the final scores on the two essays are averaged and rounded up to the nearest half-point interval which is then reported as the single score for examinee performance on the analytical writing section. For example, if an examinee receives two identical scores of 3 from human raters on the issue-writing task and scores of 3 and 4 from human raters on the argument writing task, the average scores are 3 and 3.5 for the examinee on the issue and the argument tasks respectively. They are further averaged to produce 3.25, which is then rounded up to 3.5 as a single score for that examinee on the

analytical writing section. Scores assessed by e-rater are real values, unlike human scores, which are strictly integers, and the decimal values in e-rater scores are preserved for accuracy up until the last stage when a final single score is generated for the analytical writing section. For example, if the same examinee as discussed previously receives a score of 3 from a single human rater on both issue and argument writing tasks, and scores 3.3 and 3.4 from e-rater on the issue and argument writing tasks respectively; the average scores for the two tasks will be 3.15 and 3.20 for issue and argument respectively. A further average of these two scores will produce a single score of 3.175 which when rounded off according to the general rounding rules (round down if less than 0.5 and vice versa) will result in a final score of 3 as the single score for the examinee on the analytical writing section. Now, when compared to the previous single score derived solely on the basis of human scores, the computed discrepancy is inflated in contrast to the actual discrepancy as the score derived from humans was rounded up to a higher value.

Conclusion

The PS, G, and GPSI scoring models were built and evaluated on GRE data drawn from the available test records between September 2006 and September 2007 using e-rater v7.2. These data comprised of over 750,000 essay responses written to 113 issue prompts and 139 argument prompts. Criteria for evaluation of e-rater scoring models included level of agreement with human scores, degradation in agreement from human scoring, standardized mean score differences between human and automated scoring, and correlations with external variables (such as scores on other GRE sections, English as best language, and undergraduate overall and major GPA). Based on the evaluation criteria, GPSI and PS models were determined as the best scoring models for the issue and the argument prompts respectively. Performance of the selected e-rater scoring models was further evaluated across different demographic subgroups. Results revealed adequate performance of the different e-rater scores at the prompt level, with a notable exception for examinees from China with e-rater scores around half a *SD* higher than the human scores, and for African American test takers with e-rater scores roughly two-tenths of a *SD* lower than the human scores.

The use of e-rater as a check on a human score was investigated as an alternate approach to a contributory score. Under the check score approach, e-rater score was checked for agreement with the first human score within an empirically established range, beyond which a second human score was required. The first human score became the final score for the essay, unless a

second human rating was desired. Various agreement thresholds were evaluated under the check score model to minimize differences across the subgroups. A discrepancy threshold of 0.5 point between the automated and the human score was selected for e-rater to yield performance similar to double human scoring, but with significant savings in second human ratings.

As part of ongoing efforts, it will be critical to monitor and evaluate e-rater performance in operation from time to time owing to the anticipated changes in the overall test format, examinee and human rater characteristics, and human scoring trends over time, as well as new feature developments and enhancements in the e-rater engine. We will also investigate the differences in e-rater and human scores observed for some subgroups in this evaluation to better understand their source and origin.

References

Attali, Y. (2009). *Interim summary of analyses related to content scoring of TOEFL integrated essays*. Unpublished manuscript.

Attali, Y., & Burstein, J. (2006). Automated essay scoring with e-rater v.2. *Journal of Technology, Learning, and Assessment, 4*(3). Retrieved from www.jtla.org.

Bernstein, J., De Jong, J., Pisoni, D., & Townshend, B. (2000). Two experiments on automatic scoring of spoken language proficiency. *Proceedings of InSTIL2000* (pp. 57–61). Dundee, Scotland: University of Abertay.

Braun, H. I. (1988). Understanding scoring reliability: Experiments in calibrating essay readers. *Journal of Educational Statistics, 13*, 1–18.

Burstein, J. (2003). The e-rater® scoring engine: Automated essay scoring with natural language processing. In M. D. Shermis & J. C. Burstein (Eds.), *Automated essay scoring: A cross-disciplinary perspective* (pp. 113–121). Hillsdale, NJ: Lawrence Erlbaum Associates.

Burstein, J., Kukich, K., Wolff, S., Lu, C., & Chodorow, M. (1998, April). *Computer analysis of essays*. Paper presented at the annual meeting of the National Council on Measurement in Education, Montreal, Canada.

Callear, D., Jerrams-Smith, J., & Soh, V. (2001). CAA of short non-MCQ answers. *Proceedings of the 5th International CAA Conference* (pp. 55–69). Loughborough, UK: Loughborough University.

Chevalier, S. (2007). Speech interaction with Saybot player, a CALL software to help Chinese learners of English. *In Proceedings of the International Speech Communication Association Special Interest Group on Speech and Language Technology in Education* (pp. 37-40). Farmington, PA: International Speech Communication Association.

Culham, *R*. (2003). *6 + 1 traits of writing: The complete guide*. New York, NY: Scholastic, Inc.

Daly, J. A., & Dickson-Markman, F. (1982). Contrast effects in evaluating essays. *Journal of Educational Measurement, 19*, 309–316.

Franco, H., Abrash, V., Precoda, K., Bratt, H., Rao, *R*., Butzberger, J., … Cesari, F. (2000). The SRI EduSpeak™ system: Recognition and pronunciation scoring for language learning. *Proceedings of InSTILL* (pp. 123–128). Scotland: University of Abertay, Dundee.

Hales, L. W., & Tokar, E. (1975). The effect of the quality of preceding responses on the grades assigned to subsequent responses to an essay question. *Journal of Educational Measurement, 12,* 115–117.

Hughes, D. C., & Keeling, B. (1984). The use of model essays to reduce context effects in essay scoring. *Journal of Educational Measurement, 21,* 277–281.

Hughes, D. C., Keeling, B., & Tuck, B. F. (1980a). Essay marking and the context problem. *Educational Research, 22,* 147–148.

Hughes, D. C., Keeling, B., & Tuck, B. F. (1980b). The influence of context position and scoring method on essay scoring. *Journal of Educational Measurement, 17*, 131–135.

Hughes, D. C., Keeling, B., & Tuck, B. F. (1983). The effects of instructions to scorers intended to reduce context effects in essay scoring. *Educational and Psychological Measurement, 43*, 1047–1050.

Landauer, T. K., Laham, D., & Foltz, P. W. (2003). Automated scoring and annotation of essays with the Intelligent Essay Assessor. In M. D. Shermis & J. C. Burstein (Eds.), *Automated essay scoring: A cross-disciplinary perspective* (pp. 87–112). Hillsdale, NJ: Lawrence Erlbaum Associates.

Leacock, C., & Chodorow, M. (2003). C-rater: Scoring of short-answer questions. *Computers and the Humanities, 37*(4), 389–405.

Lunz, M. E., Wright, B. D., & Linacre, J. M. (1990). Measuring the impact of judge severity on examination scores. *Applied Measurement in Education, 3*, 331–345.

Mitchell, T., Russell, T., Broomhead, P., & Aldridge, *N*. (2002). Towards robust computerized marking of free-text responses. *Proceedings of the Sixth International Computer Assisted Assessment Conference* (pp. 233–249). Loughborough, UK: Loughborough University.

Page, E. B. (1966). The imminence of grading essays by computer. *Phi Delta Kappan, 48,* 238–243.

Page, E. B. (1968). The use of the computer in analyzing student essays. *International Review of Education 14*(2), 210–225.

Page, E. B. (2003). Project essay grade: PEG. In M. D. Shermis & J. C. Burstein (Eds.), *Automated essay scoring: A cross-disciplinary perspective* (pp. 43–54). Hillsdale, NJ: Lawrence Erlbaum Associates.

Quinlan, T., Higgins, D., & Wolff, S. (2009). *Evaluating the construct coverage of the e-rater® scoring engine* (ETS Research Rep. No. RR-09-01). Princeton, NJ: ETS.

Ramineni, C., Davey, T., & Weng, V. (2010). Statistical evaluation and integration of a *new positive feature for e-rater v10.1*. Unpublished manuscript.

Risse, T. (2007, September). *Testing and assessing mathematical skills by a script based system.* Paper presented at the 10th International Conference on Interactive Computer Aided Learning, Villach, Austria.

Rudner, L. M., Garcia, V., & Welch, C. (2006). An evaluation of IntelliMetric™ essay scoring system. *The Journal of Technology, Learning and Assessment, 4*(4), Retrieved from www.jtla.org.

Sargeant, J., Wood, M. M., & Anderson, S. M. (2004). A human-computer collaborative approach to the marking of free text answers. *Proceedings of the 8th International CAA Conference* (pp. 361–370). Loughborough, UK: Loughborough University.

Shermis, M. D., & Burstein, J. C. (2003). *Automated essay scoring: A cross-disciplinary perspective*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Singley, M. K., & Bennett, *R*. E. (1998). *Validation and extension of the mathematical expression response type: Applications of schema theory to automatic scoring and item generation in mathematics* (GRE Board Professional Report No. 93-24P). Princeton, NJ: ETS.

Spear, M. (1997). The influence of contrast effects upon teachers' marks. *Educational Research, 39*, 229–233.

Stalnaker, J. M. (1936). The problem of the English examination. *Educational Record, 17*, 41.

Sukkarieh, J. Z., & Pulman, S. G. (2005). Information extraction and machine learning: Auto-marking short free text responses to science questions. *Proceedings of the 12th International Conference on Artificial Intelligence in Education* (pp. 629–637). Amsterdam, The Netherlands: IOS Press.

Williamson, D. M., & Davey, T. (2007). *Principles and processes for automated scoring: A summary of current policy, procedures and future work* (ETS Statistical Rep. No. SR-2009-061). Princeton, NJ: ETS.

Xi, X., Higgins, D., Zechner, K., & Williamson, D. M. (2008). *Automated scoring of spontaneous speech using SpeechRater v1.0* (ETS Research Rep. No. RR-08-62). Princeton, NJ: ETS.

Zechner, K., & Bejar, I. (2006). Towards automatic scoring of non-native spontaneous speech. *Proceedings of the Human Language Technology Conference of the North American Chapter of the ACL* (pp. 216–223). New York, NY: Association for Computational Linguistics.

List of Appendices

Page

Appendix A

GRE Scoring Guide

Score	GRE scoring guide (issue)	GRE scoring guide (argument)
6	A 6 paper presents a cogent, well-articulated analysis of the complexities of the issue and conveys meaning skillfully. A typical paper in this category: presents an insightful position on the issue develops the position with compelling reasons and/or persuasive examples sustains a well-focused, well-organized analysis, connecting ideas logically expresses ideas fluently and precisely, using effective vocabulary and sentence variety demonstrates facility with the conventions (i.e., grammar, usage, and mechanics) of standard written English but may have minor errors	A 6 paper presents a cogent, well-articulated critique of the argument and conveys meaning skillfully. A typical paper in this category: clearly identifies important features of the argument and analyzes them insightfully develops ideas cogently, organizes them logically, and connects them with clear transitions effectively supports the main points of the critique demonstrates control of language, including appropriate word choice and sentence variety demonstrates facility with the conventions (i.e., grammar, usage, and mechanics) of standard written English but may have minor errors

Score	GRE scoring guide (issue)	GRE scoring guide (argument)
5	A 5 paper presents a generally thoughtful, well-developed analysis of the complexities of the issue and conveys meaning clearly.	A 5 paper presents a generally thoughtful, well-developed critique of the argument and conveys meaning clearly.
	A typical paper in this category:	A typical paper in this category:
	presents a well-considered position on the issue	clearly identifies important features of the argument and analyzes them in a generally perceptive way
	develops the position with logically sound reasons and/or well-chosen examples	develops ideas clearly, organizes them logically, and connects them with appropriate transitions
	maintains focus and is generally well organized, connecting ideas appropriately	sensibly supports the main points of the critique
	expresses ideas clearly and well, using appropriate vocabulary and sentence variety	demonstrates control of language, including appropriate word choice and sentence variety
	demonstrates facility with the conventions of standard written English but may have minor errors	demonstrates facility with the conventions of standard written English but may have minor errors

Score	GRE scoring guide (issue)	GRE scoring guide (argument)
4	A 4 paper presents a competent analysis of the issue and conveys meaning adequately. A typical paper in this category: presents a clear position on the issue develops the position on the issue with relevant reasons and/or examples is adequately focused and organized expresses ideas with reasonable clarity generally demonstrates control of the conventions of standard written English but may have some errors	A 4 paper presents a competent critique of the argument and conveys meaning adequately. A typical paper in this category: identifies and analyzes important features of the argument develops and organizes ideas satisfactorily but may not connect them with transitions supports the main points of the critique demonstrates sufficient control of language to express ideas with reasonable clarity generally demonstrates control of the conventions of standard written English but may have some errors

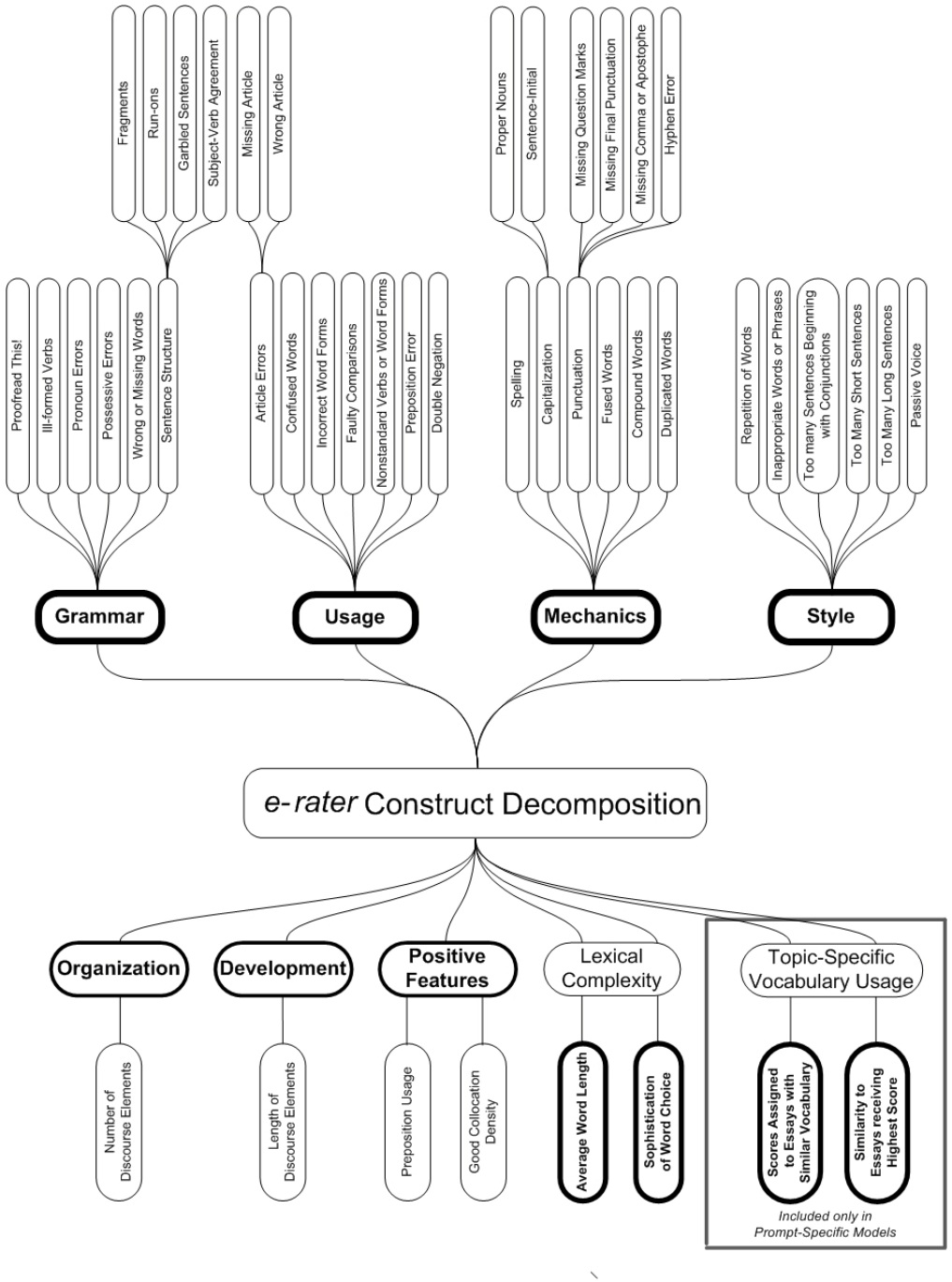
Score	GRE scoring guide (issue)	GRE scoring guide (argument)
3	A 3 paper demonstrates some competence in its analysis of the issue and in conveying meaning but is obviously flawed. A typical paper in this category exhibits one or more of the following characteristics: is vague or limited in presenting or developing a position on the issue is weak in the use of relevant reasons or examples is poorly focused and/or poorly organized presents problems in language and sentence structure that result in a lack of clarity contains occasional major errors or frequent minor errors in grammar, usage or mechanics that can interfere with meaning	A 3 paper demonstrates some competence in its critique of the argument and in conveying meaning but is obviously flawed. A typical paper in this category exhibits one or more of the following characteristics: does not identify or analyze most of the important features of the argument, although some analysis of the argument is present mainly analyzes tangential or irrelevant matters, or reasons poorly is limited in the logical development and organization of ideas offers support of little relevance and value for points of the critique lacks clarity in expressing ideas contains occasional major errors or frequent minor errors in grammar, usage, or mechanics that can interfere with meaning

Score	GRE scoring guide (issue)	GRE scoring guide (argument)
2	A 2 paper demonstrates serious weaknesses in analytical writing. A typical paper in this category exhibits one or more of the following characteristics: is unclear or seriously limited in presenting or developing a position on the issue provides few, if any, relevant reasons or examples is unfocused and/or disorganized presents serious problems in the use of language and sentence structure that frequently interfere with meaning contains serious errors in grammar, usage, or mechanics that frequently obscure meaning	A 2 paper demonstrates serious weaknesses in analytical writing. A typical paper in this category exhibits one or more of the following characteristics: does not present a critique based on logical analysis, but may instead present the writer's own views on the subject does not develop ideas, or is disorganized and illogical provides little, if any, relevant or reasonable support has serious problems in the use of language and in sentence structure that frequently interfere with meaning contains serious errors in grammar, usage, or mechanics that frequently obscure meaning

Score	GRE scoring guide (issue)	GRE scoring guide (argument)
1	A 1 paper demonstrates fundamental deficiencies in analytical writing.	A 1 paper demonstrates fundamental deficiencies in analytical writing.
	A typical paper in this category exhibits one or more of the following characteristics:	A typical paper in this category exhibits one or more of the following characteristics:
	provides little or no evidence of the ability to understand and analyze the issue	provides little or no evidence of the ability to understand and analyze the argument
	provides little or no evidence of the ability to develop an organized response	provides little or no evidence of the ability to develop an organized response
	presents severe problems in language and sentence structure that persistently interfere with meaning	has severe problems in language and sentence structure that persistently interfere with meaning
	contains pervasive errors in grammar, usage, or mechanics that result in incoherence	contains pervasive errors in grammar, usage, or mechanics that result in incoherence
0	Off-topic (i.e., provides no evidence of an attempt to respond to the assigned topic), in a foreign language, merely copies the topic, consists of only keystroke characters, or is illegible, or nonverbal	Off-topic (i.e., provides no evidence of an attempt to respond to the assigned topic), in a foreign language, merely copies the topic, consists of only keystroke characters, or is illegible, or nonverbal
Not scored	Blank	Blank

Appendix B

Organization and Construct Coverage of e-rater v11.1



Note. From *Evaluating the Construct Coverage of the e-rater Scoring Engine* (ETS Research Rep. No. RR-09-01; p. 9), by T. Quinlan, D. Higgins, and S. Wolff, 2009, Princeton, NJ: ETS. Copyright 2009 by Educational Testing Service. Adapted with permission.

Appendix C

Glossary of e-rater Microfeatures

Feature	Name of microfeature	Brief description	Example
Grammar	Fragment	A sentence-like string of words that does not contain a tensed verb or that is lacking an	"And the school too."
Grammar	Run-on sentence	A sentence-like string of words that contains two or more clauses without a conjunction	"Students deserve more respect they are young adults."
Grammar	Garbled sentence	A sentence-like string of words that contains five or more errors, or that has an error-to-word ratio > 0.1, or that is unparseable by the Santa module, which organizes words	"And except unusual exception, most children can be ease with their parents not the their teachers."
Grammar	Subject-verb agreement	A singular noun with a plural verb or a plural noun with a singular verb	"A uniform represent the school."
Grammar	Ill-formed verb	A mismatch between the tense of a verb and the local syntactic environment; also, use of *of* for *have*, as in *could of*	"We need the freedom to chose what we want to wear."

Feature	Name of microfeature	Brief description	Example
Grammar	Pronoun error	An objective case pronoun where nominative pronoun is required, or vice versa	"Us students want to express ourselves."
Grammar	Possessive error	A plural noun where a possessive noun should be; usually the result of omitting an apostrophe	"They stayed at my parents house."
Grammar	Wrong or missing word	An ungrammatical sequence of words that is usually the result of a typographical error or of an omission of a word	"The went to their teacher with a complaint."
Grammar	Proofread this!	An error which is difficult to analyze; often the result of multiple, adjacent errors	"They had many wrong science knowladge."
Usage	Wrong Article (Method 1)	A singular determiner with a plural noun or a plural determiner with a singular noun; use of *an* instead of *a*, or vice versa	"I wrote in these book. He ate a orange."

Feature	Name of microfeature	Brief description	Example
Usage	Articles (wrong, missing, extraneous)	Use of *a* when *the* is required, or vice versa	We had **the good time at the party. (Wrong article) I think it is good for me to share **room with others. (Missing article) I think that mostly people succeed because of **the hard work. (Extraneous article)
Usage	Articles (wrong, missing, extraneous)	An article where none should be used or a missing article where one is required	

Feature	Name of microfeature	Brief description	Example
Usage	Confused words	Confusion of homophones, words that sound alike or nearly alike	Those young soldiers had to **loose their innocence and grow up. (lose) **Its your chance to show them that you are an independent person. (It's) Parents should give **there children curfews. (their) I think that mostly people succeed because of **the hard work . (Extraneous article)
Usage	Wrong word form	A verb used in place of a noun	"The choose is not an easy one."
Usage	Faulty comparison	Use of *more* with a comparative adjective or *most* with a superlative adjective	"This is a more better solution."
Usage	Preposition error	Use of incorrect preposition, omitting a preposition, or using an extraneous one	Their knowledge **on physics were very important. (of) The teenager was driving **in a high speed when he approached the curve. (at) Thank you for your consideration **to this matter. (of, in)
Usage	Nonstandard verb or word form	Nonword: Various nonwords commonly used in oral language.	Nonwords: gonna, kinda, dont, cant, gotta, wont, sorta, shoulda, woulda, oughtta, wanna, hafta

Feature	Name of microfeature	Brief description	Example
Usage	Double Negation	Instances of "not" or its contracted form "'n't" followed by negatives such as no, nowhere,	"The counselor doesn't have no vacations."
Mechanics	Spelling	A group of letters not conforming to known orthographic pattern	
Mechanics	Failure to capitalize proper noun	Compares words to lists of pronouns that should be capitalized (e.g., names of countries, capital cities, male & female proper nouns, and religious holidays)	
Mechanics	Initial caps	Missing initial capital letter in a sentence	
Mechanics	Missing question mark	An unpunctuated interrogative	
Mechanics	Missing final punctuation	A sentence lacking a period	
Mechanics	Missing comma or apostrophe	Detects missing commas or apostrophes	Apostrophe: arent, cant, couldnt, didnt, doesnt, dont, hadnt, hasnt, havent, im, isnt, ive, shouldnt, someones, somebodys, wasnt, werent, wont, wouldnt, youre, thats, theyre, theyve, theres, todays, whats, wifes, lifes, anybodys, anyones, everybodys, everyones, childrens

Feature	Name of microfeature	Brief description	Example
Mechanics	Hyphen error	Missing hyphen in number constructions, certain noun compounds, and modifying expressions preceding a	"He fell into a three foot hole. They slipped past the otherwise engaged sentinel."
Mechanics	Fused word	Fused: An error consisting of two words merged together	"It means alot to me." Fused: alot, dresscode, eachother, everytime, otherhand, highschool, notime, infact, inorder, phonecall, schoollife, somethings, no one
Mechanics	Compound word	Detects errors consisting of two words that should be one.	
Mechanics	Duplicate	Two adjacent identical words or two articles, pronouns, modals, etc.	"I want to to go… They tried to help us them."
Style	Repetition of words	Excessive repetition of words	
Style	Inappropriate word or phrase	Inappropriate words. Various expletives.	
Style	And, and, and	Too many sentences beginning with coordinate conjunction	
Style	Too many short sentences	More than four short sentences, less than 7 words	
Style	Too many long sentences	More than four long sentences, more than 55 words	

Feature	Name of microfeature	Brief description	Example
Style	Passive voice	By-passives: the number of times there occur sentences containing BE + past participle verb form, followed somewhere later in the sentence by the word *bv*.	"The sandwich was eaten by the girl."
Organization	Number of discourse elements	Provides a measure of development, as a function of the number of	
Development	Content development	Provides a measure of average length of discourse elements	
Prompt-specific vocabulary usage	Score-group of essays to which target essay is most closely related.	Compares* essay to essay-groups 6, 5, 4, etc., and assigns score closest relationship (max cosine). *Cosine of weighted frequency	
Prompt-specific vocabulary usage	Similarity of essay's vocabulary to vocabulary of essays with score	Compares* essay to essay-group score 6. *Cosine of weighted frequency vectors.	
Lexical complexity	Sophistication of word choice	Calculates median average word frequency, based on Lexile corpus	
Lexical complexity	Word length	The mean average number of characters within words	

Feature	Name of microfeature	Brief description	Example
Positive Features	Preposition Usage	The mean probability of the writer's prepositions	
Positive Features	Good Collocation Density	The number of good collocations over the total number of words	

Appendix D

Flagging Criterion and Conditions

Flagging criterion	Flagging condition
Quadratic-weighted kappa between e-rater score and human score	Quadratic-weighted kappa less than 0.7
Pearson correlation between e-rater score and human score	Correlation less than 0.7
Standardized difference between e-rater score and human score	Standardized difference greater than 0.15 in absolute value
Notable reduction in quadratic-weighted kappa or correlation from human/human to e-rater/human	Decline in quadratic-weighted kappa or correlation of greater than 0.10
Standardized difference between e-rater score and human score within a subgroup of concern	Standardized difference greater than 0.10 in absolute value

Note. All the threshold values are checked to 4 decimal values for flagging.

Appendix E

Advisory Flag Analyses for Issue and Argument Prompts

Table E 1

Individual Analysis of All Advisory Flags for GRE Issue Prompts

H1	0	1	Total
Human1 (H1) by Flag_2 (re use of language)			
0	684	5,791	6,475
1	2,540	182	2,722
2	18,385	652	19,037
3	75,188	1,131	76,319
4	121,313	1,116	122,429
5	62,900	673	63,573
6	15,197	175	15,372
Total	296,207	9,720	305,927
Human1 (H1) by Flag_4 (key concepts)			
0	5,902	573	6,475
1	2,557	165	2,722
2	18,845	192	19,037
3	76,137	182	76,319
4	122,386	43	122,429
5	63,566	7	63,573
6	15,372	0	15,372
Total	304,765	1,162	305,927
Human1 (H1) by Flag_8 (not relevant)			
0	219	6,256	6,475
1	2,629	93	2,722
2	18,731	306	19,037
3	75,482	837	76,319
4	121,331	1,098	122,429
5	63,081	492	63,573

H1	0	1	Total
6	15,233	139	15,372
Total	296,706	9,221	305,927
Human1 (H1) by Flag_16 (restatement)			
0	6,440	35	6,475
1	2,675	47	2,722
2	18,905	132	19,037
3	76,175	144	76,319
4	122,348	81	122,429
5	63,549	24	63,573
6	15,369	3	15,372
Total	305,461	466	305,927
Human1 (H1) by Flag_32 (no resemblance)			
0	190	6,285	6,475
1	2,544	178	2,722
2	18,427	610	19,037
3	74,715	1,604	76,319
4	120,364	2,065	122,429
5	62,580	993	63,573
6	15,085	287	15,372
Total	293,905	12,022	305,927
Human1 (H1) by Flag_64 (too brief)			
0	123	6,352	6,475
1	2,660	62	2,722
2	19,021	16	19,037
3	76,316	3	76,319
4	122,429	0	122,429
5	63,573	0	63,573
6	15,372	0	15,372
Total	299,494	6,433	305,927

H1	0	1	Total
Human1 (H1) by Flag_128 (excessive length)			
0	6,473	2	6,475
1	2,717	5	2,722
2	18,993	44	19,037
3	75,997	322	76,319
4	120,944	1,485	122,429
5	59,271	4,302	63,573
6	10,118	5,254	15,372
Total	294,513	11,414	305,927
Human1 (H1) by Flag_512 (excessive number of problems)			
0	302	6,173	6,475
1	2,696	26	2,722
2	19,026	11	19,037
3	76,319	0	76,319
4	122,429	0	122,429
5	63,573	0	63,573
6	15,372	0	15,372
Total	299,717	6,210	305,927

Table E2

Sequential Analysis of Selected Advisory Flags for Issue Prompts With Responses Greater Than 1,000 Words Removed

H1	0	1	Total
Human1 (H1) by Flag_512 (excessive number of problems)			
0	251	344	595
1	2,672	21	2,693
2	19,025	11	19,036
3	76,279	0	76,279
4	122,234	0	122,234

H1	0	1	Total
5	63,012	0	63,012
6	14,133	0	14,133
Total	297,606	376	297,982
	Human1 (H1) by Flag_64 (too brief)		
0	72	179	251
1	2,642	30	2,672
2	19,009	16	19,025
3	76,276	3	76,279
4	122,234	0	122,234
5	63,012	0	63,012
6	14,133	0	14,133
Total	297,378	228	297,606
	Human1 (H1) by Flag_8 (not relevant)		
0	26	46	72
1	2,565	77	2,642
2	18,702	307	19,009
3	75,440	836	76,276
4	121,142	1,092	122,234
5	62,530	482	63,012
6	14,015	118	14,133
Total	294,420	2,958	297,378

Table E3

Individual Analyses of All Advisory Flags for GRE Argument Prompts

H1	Flag_2		Total
	0	1	
	Human1 (H1) by Flag_2 (re use of language)		
0	725	6,223	6,948
1	5,265	91	5,356

H1	Flag_2		Total
	0	1	
2	43,442	346	43,788
3	92,456	473	92,929
4	123,107	663	123,770
5	71,986	958	72,944
6	18,586	522	19,108
Total	355,567	9,276	364,843
Human1 (H1) by Flag_4 (key concepts)			
0	6,394	554	6,948
1	4,949	407	5,356
2	43,170	618	43,788
3	92,593	336	92,929
4	123,746	24	123,770
5	72,943	1	72,944
6	19,108	0	19,108
Total	362,903	1,940	364,843
Human1 (H1) by Flag_8 (not relevant)			
0	152	6,796	6,948
1	4,714	642	5,356
2	41,233	2,555	43,788
3	90,341	2,588	92,929
4	122,515	1,255	123,770
5	72,599	345	72,944
6	19,062	46	19,108
Total	350,616	14,227	364,843
Human1 (H1) by Flag_16 (restatement)			
0	6,884	64	6,948
1	5,255	101	5,356
2	43,620	168	43,788
3	92,870	59	92,929

H1	Flag_2		Total
	0	1	
4	123,748	22	123,770
5	72,935	9	72,944
6	19,106	2	19,108
Total	364,418	425	364,843
Human1 (H1) by Flag_32 (no resemblance)			
0	168	6,780	6,948
1	4,526	830	5,356
2	40,554	3,234	43,788
3	90,094	2,835	92,929
4	122,489	1,281	123,770
5	72,628	316	72,944
6	19,060	48	19,108
Total	349,519	15,324	364,843
Human1 (H1) by Flag_64 (too brief)			
0	203	6,745	6,948
1	5,207	149	5,356
2	43,750	38	43,788
3	92,924	5	92,929
4	123,768	2	123,770
5	72,944	0	72,944
6	19,108	0	19,108
Total	357,904	6,939	364,843
Human1 (H1) by Flag_128 (excessive length)			
0	6,944	4	6,948
1	5,356	0	5,356
2	43,778	10	43,788
3	92,914	15	92,929
4	123,731	39	123,770
5	72,826	118	72,944

H1	Flag_2		Total
	0	1	
6	18,356	752	19,108
Total	363,905	938	364,843
Human1 (H1) by Flag_512 (excessive number of problems)			
0	371	6,577	6,948
1	5,296	60	5,356
2	43,778	10	43,788
3	92,929	0	92,929
4	123,770	0	123,770
5	72,944	0	72,944
6	19,108	0	19,108
Total	358,196	6,647	364,843

Table E4

Sequential Analysis of Selected Advisory Flags for Argument Prompts With Responses Greater Than 1,000 Words Removed

H1	0	1	Total
Human1 (H1) by Flag_64 (too brief)			
0	129	489	618
1	5,212	91	5,303
2	43,757	38	43,795
3	92,936	5	92,941
4	123,776	2	123,778
5	72,941	0	72,941
6	19,046	0	19,046
Total	357,797	625	358,422
Human1 (H1) by Flag_512 (excessive number of problems)			
0	121	8	129
1	5,171	41	5,212

H1	0	1	Total
2	43,747	10	43,757
3	92,936	0	92,936
4	123,776	0	123,776
5	72,941	0	72,941
6	19,046	0	19,046
Total	357,738	59	357,797

Human1 (H1) by Flag_8 (not relevant)

H1	0	1	Total
0	70	51	121
1	4,601	570	5,171
2	41,196	2,551	43,747
3	90,348	2,588	92,936
4	122,521	1,255	123,776
5	72,596	345	72,941
6	19,000	46	19,046
Total	350,332	7,406	357,738

Human1 (H1) by Flag_2 (re use of language)

0	57	13	70
1	4,516	85	4,601
2	40,856	340	41,196
3	89,878	470	90,348
4	121,860	661	122,521
5	71,639	957	72,596
6	18,486	514	19,000
Total	347,292	3,040	350,332

Appendix F

Agreement With Human Scores on Issue and Argument Prompts at the Prompt Level

Table F1

Agreement With Human Scores on Issue Prompts: Generic (G) Model

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
Average	2,070	3.85	0.96	3.86	0.96	0.00	0.42	0.74	59	98	0.74	3.85	0.98	0.42	0.76	59	98	3.85	0.95	0.00	0.79	0.01	0.05
AJ000627	1,655	3.78	0.94	3.77	0.94	0.00	0.42	0.74	60	98	0.74	3.82	0.96	0.42	0.73	59	98	3.81	0.93	0.04	0.77	-0.01	0.03
AJ000628	1,488	3.85	0.92	3.84	0.91	-0.01	0.41	0.71	59	98	0.71	3.95	0.95	0.40	0.73	58	98	3.96	0.91	0.11	0.76	0.02	0.05
AJ000629	2,397	3.87	0.90	3.89	0.91	0.03	0.45	0.74	63	99	0.74	3.81	1.00	0.43	0.76	60	99	3.82	0.97	-0.05	0.80	0.02	0.06
DH002327	707	3.84	0.99	3.91	1.00	0.07	0.40	0.74	57	98	0.74	3.96	0.95	0.43	0.76	60	98	3.95	0.92	0.12	0.79	0.02	0.05
DH002330	2,392	3.81	0.98	3.82	1.02	0.01	0.42	0.75	58	98	0.75	3.82	1.01	0.43	0.77	59	98	3.83	0.97	0.02	0.80	0.02	0.05
DH002334	2,415	3.72	1.00	3.76	1.00	0.04	0.46	0.77	61	98	0.77	3.70	1.03	0.45	0.78	60	98	3.70	1.01	-0.03	0.82	0.01	0.05
DH002335	2,392	4.02	1.00	4.00	0.99	-0.02	0.40	0.73	58	97	0.73	4.05	0.96	0.41	0.76	59	98	4.05	0.93	0.03	0.79	0.03	0.06
DH002353	2,402	3.81	0.98	3.79	0.96	-0.03	0.44	0.75	60	98	0.75	3.80	1.02	0.45	0.77	61	98	3.80	0.97	-0.01	0.79	0.02	0.04
DH002354	2,394	3.90	0.96	3.90	0.94	0.00	0.41	0.73	58	98	0.73	3.85	0.97	0.43	0.76	60	99	3.85	0.95	-0.06	0.80	0.03	0.07
DH002357	2,420	3.80	1.01	3.81	1.00	0.01	0.43	0.75	59	97	0.75	3.90	1.02	0.42	0.77	58	98	3.90	1.00	0.09	0.80	0.02	0.05
GM001518	2,407	3.94	0.89	3.92	0.90	-0.02	0.44	0.74	62	98	0.74	3.83	0.94	0.43	0.74	61	98	3.82	0.91	-0.12	0.78	0.00	0.04
GM001520	2,402	3.87	0.99	3.82	0.99	-0.05	0.41	0.74	58	97	0.74	3.89	1.05	0.43	0.77	59	98	3.89	1.02	0.01	0.80	0.03	0.06

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
GM001521	548	3.79	0.94	3.76	0.95	-0.03	0.42	0.74	59	98	0.74	3.75	0.97	0.38	0.72	56	98	3.75	0.95	-0.04	0.77	-0.02	0.03
GM001524	2,404	3.87	0.99	3.86	1.00	-0.01	0.41	0.74	58	97	0.74	3.99	1.04	0.42	0.77	58	98	3.99	1.01	0.12	0.81	0.03	0.07
GM001527	2,429	3.78	1.00	3.77	1.01	-0.01	0.46	0.76	61	97	0.76	3.82	1.02	0.43	0.76	59	98	3.82	0.99	0.04	0.79	0.00	0.03
GM001529	2,361	3.90	0.96	3.90	0.97	-0.01	0.40	0.74	58	98	0.74	3.85	0.99	0.41	0.76	59	99	3.84	0.96	-0.06	0.79	0.02	0.05
GM001531	1,403	3.86	0.98	3.89	0.94	0.03	0.42	0.72	59	97	0.72	3.97	0.91	0.38	0.70	56	97	3.96	0.87	0.10	0.75	-0.02	0.03
GM001545	2,103	3.78	1.00	3.77	1.02	0.00	0.40	0.75	57	97	0.75	3.63	1.03	0.40	0.76	57	98	3.62	1.00	-0.15	0.80	0.01	0.05
GM001551	2,374	3.84	0.97	3.84	0.95	0.00	0.43	0.74	60	98	0.74	3.87	1.00	0.44	0.78	60	99	3.86	0.97	0.02	0.81	0.04	0.07
GM001552	2,427	3.71	1.04	3.75	1.02	0.04	0.40	0.76	57	98	0.76	3.64	1.03	0.42	0.77	58	98	3.64	1.01	-0.06	0.80	0.01	0.04
GM001563	2,381	3.92	0.88	3.95	0.89	0.03	0.44	0.73	62	98	0.73	3.76	0.92	0.39	0.71	58	98	3.77	0.87	-0.17	0.77	-0.02	0.04
GM001565	2,412	3.79	0.91	3.77	0.91	-0.02	0.40	0.72	59	98	0.72	3.75	0.98	0.42	0.75	60	98	3.74	0.95	-0.06	0.79	0.03	0.07
GM010292	378	3.91	0.97	3.99	0.97	0.08	0.34	0.68	53	96	0.69	4.03	0.91	0.43	0.74	60	98	4.05	0.87	0.14	0.79	0.06	0.10
GM010295	2,421	3.94	0.98	3.96	0.97	0.02	0.44	0.76	61	98	0.76	3.94	1.00	0.44	0.77	61	98	3.93	0.98	-0.01	0.80	0.01	0.04
HP010125	2,410	3.93	0.95	3.90	0.97	-0.04	0.42	0.73	60	97	0.73	3.93	0.96	0.42	0.74	60	98	3.92	0.91	-0.01	0.78	0.01	0.05
HP010128	2,423	3.80	0.94	3.79	0.92	-0.01	0.43	0.74	61	98	0.74	3.76	0.96	0.44	0.76	61	98	3.76	0.93	-0.04	0.79	0.02	0.05
HP010132	1,392	3.79	1.01	3.79	1.00	0.01	0.37	0.73	55	97	0.73	3.79	1.00	0.41	0.75	58	98	3.80	0.98	0.01	0.79	0.02	0.06
HP010134	2,406	3.87	0.99	3.86	0.98	-0.01	0.41	0.74	58	98	0.74	3.87	1.00	0.43	0.75	59	98	3.87	0.96	0.00	0.78	0.01	0.04
HP010142	2,397	4.01	0.92	4.00	0.95	-0.01	0.42	0.73	60	98	0.74	4.00	0.94	0.43	0.74	60	98	4.01	0.91	0.00	0.77	0.01	0.03
HP010144	1,014	3.92	0.98	3.93	0.98	0.01	0.40	0.72	57	96	0.72	3.98	0.99	0.38	0.74	56	98	3.98	0.95	0.06	0.78	0.02	0.06
HP010146	2,419	3.88	0.94	3.88	0.94	0.00	0.45	0.74	61	98	0.74	3.92	0.98	0.45	0.77	62	98	3.90	0.96	0.03	0.79	0.03	0.05

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
HP010148	2,394	3.98	0.88	3.97	0.89	-0.01	0.42	0.72	61	98	0.72	4.00	0.94	0.45	0.75	62	99	4.00	0.91	0.03	0.78	0.03	0.06
HP010187	2,390	3.95	0.95	3.94	0.97	0.00	0.44	0.75	61	98	0.75	3.96	0.98	0.43	0.75	60	98	3.96	0.95	0.02	0.79	0.00	0.04
HP010190	2,423	3.76	1.01	3.77	0.99	0.01	0.43	0.76	59	98	0.76	3.61	1.08	0.41	0.77	57	98	3.60	1.05	-0.16	0.81	0.01	0.05
HP010191	2,408	3.88	0.89	3.92	0.91	0.05	0.40	0.70	59	98	0.70	3.97	0.92	0.42	0.73	60	98	3.98	0.89	0.11	0.78	0.03	0.08
HP010192	1,568	3.88	0.92	3.87	0.92	-0.01	0.44	0.74	61	98	0.74	3.83	0.94	0.41	0.74	59	99	3.83	0.91	-0.06	0.78	0.00	0.04
HP010196	2,431	3.84	0.96	3.85	0.96	0.01	0.43	0.75	60	98	0.75	3.81	0.97	0.43	0.76	60	98	3.81	0.93	-0.03	0.79	0.01	0.04
HP010198	1,540	3.83	0.93	3.77	0.92	-0.06	0.39	0.72	58	98	0.72	3.83	0.96	0.41	0.74	59	99	3.83	0.91	0.00	0.78	0.02	0.06
HP010224	2,107	3.70	1.00	3.69	0.99	-0.01	0.44	0.77	60	98	0.77	3.74	1.02	0.44	0.78	60	98	3.74	1.01	0.04	0.81	0.01	0.04
LY000567	2,442	3.86	0.93	3.83	0.95	-0.03	0.45	0.76	61	99	0.76	3.83	0.99	0.43	0.76	60	98	3.83	0.95	-0.03	0.79	0.00	0.03
LY000568	956	3.96	1.00	3.97	0.93	0.01	0.44	0.76	60	99	0.77	4.03	0.99	0.44	0.78	60	99	4.03	0.94	0.07	0.80	0.02	0.03
LY000572	2,407	3.78	0.96	3.77	0.97	-0.01	0.46	0.75	62	97	0.75	3.71	0.99	0.41	0.75	58	98	3.71	0.97	-0.07	0.79	0.00	0.04
LY000576	2,398	3.79	0.93	3.78	0.95	-0.01	0.39	0.71	58	97	0.71	3.84	0.96	0.40	0.74	58	98	3.85	0.93	0.06	0.78	0.03	0.07
LY000580	701	3.82	0.99	3.82	1.01	0.00	0.48	0.77	63	97	0.77	3.70	1.01	0.42	0.77	58	99	3.70	0.99	-0.12	0.81	0.00	0.04
LY000582	2,380	3.79	0.96	3.82	0.95	0.03	0.44	0.75	61	98	0.76	3.83	0.98	0.45	0.77	61	98	3.84	0.95	0.05	0.80	0.02	0.04
LY000584	1,709	3.82	0.96	3.83	0.94	0.02	0.42	0.73	59	97	0.73	3.74	1.01	0.44	0.77	60	98	3.73	0.96	-0.08	0.80	0.04	0.07
LY000585	2,374	4.03	0.99	4.03	1.02	-0.01	0.43	0.77	59	98	0.77	3.92	0.98	0.47	0.80	63	99	3.92	0.95	-0.11	0.83	0.03	0.06
LY000587	2,409	3.79	0.96	3.81	0.97	0.02	0.41	0.73	59	98	0.73	3.77	0.99	0.43	0.76	60	98	3.76	0.96	-0.03	0.79	0.03	0.06
LY000590	2,392	3.79	0.97	3.78	0.99	-0.01	0.42	0.75	59	98	0.75	3.86	0.99	0.42	0.75	59	98	3.85	0.96	0.06	0.79	0.00	0.04
LY000591	489	3.79	0.98	3.83	0.95	0.04	0.47	0.77	63	98	0.77	3.85	0.99	0.42	0.76	59	98	3.86	0.96	0.07	0.78	-0.01	0.01

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
LY000597	980	3.78	0.99	3.71	0.99	-0.08	0.44	0.75	60	97	0.75	3.71	1.00	0.44	0.78	60	99	3.70	0.97	-0.08	0.80	0.03	0.05
LY000598	2,439	3.88	0.98	3.87	0.97	-0.01	0.44	0.75	60	98	0.75	3.88	1.01	0.45	0.78	61	99	3.87	0.98	-0.01	0.81	0.03	0.06
LY000599	1,369	3.95	0.96	3.92	0.93	-0.02	0.40	0.73	58	98	0.73	3.98	0.95	0.41	0.75	59	99	3.99	0.92	0.04	0.79	0.02	0.06
LY000600	489	3.90	1.02	3.99	1.03	0.09	0.39	0.73	56	96	0.74	3.97	0.98	0.42	0.73	59	96	3.97	0.93	0.06	0.77	0.00	0.03
LY000611	2,384	3.88	0.98	3.91	0.94	0.03	0.44	0.73	60	98	0.74	3.94	0.93	0.44	0.74	61	98	3.94	0.90	0.06	0.79	0.01	0.05
LY000631	2,416	3.93	0.99	3.93	1.00	0.01	0.42	0.75	58	97	0.75	3.94	0.97	0.41	0.76	58	98	3.94	0.94	0.02	0.79	0.01	0.04
LY000632	2,376	3.92	0.95	3.94	0.95	0.02	0.40	0.73	58	98	0.73	3.92	1.00	0.45	0.77	61	99	3.91	0.97	-0.01	0.81	0.04	0.08
LY000633	2,394	3.90	0.97	3.90	0.97	0.00	0.41	0.73	58	98	0.73	3.97	0.98	0.42	0.75	58	98	3.97	0.95	0.07	0.78	0.02	0.05
LY000641	2,404	3.74	0.97	3.75	0.98	0.00	0.42	0.75	59	98	0.75	3.73	1.01	0.41	0.76	58	99	3.73	0.97	-0.02	0.80	0.01	0.05
LY000646	2,406	3.80	0.93	3.82	0.95	0.02	0.42	0.74	60	98	0.74	3.82	1.00	0.41	0.75	58	98	3.81	0.97	0.00	0.79	0.01	0.05
LY000647	2,395	3.74	0.96	3.75	0.95	0.00	0.42	0.74	59	98	0.74	3.70	0.99	0.40	0.75	58	98	3.70	0.96	-0.05	0.79	0.01	0.05
LY000648	760	3.79	0.95	3.85	0.95	0.07	0.40	0.71	58	97	0.72	3.86	0.99	0.42	0.76	59	98	3.85	0.95	0.06	0.80	0.05	0.08
LY000650	2,389	3.83	0.93	3.83	0.93	-0.01	0.46	0.75	62	98	0.75	3.83	0.98	0.42	0.75	59	98	3.82	0.94	-0.01	0.79	0.00	0.04
NB007538	2,407	3.82	0.94	3.81	0.93	-0.01	0.43	0.74	60	98	0.74	3.78	0.96	0.46	0.77	62	99	3.77	0.93	-0.05	0.80	0.03	0.06
NB007545	2,388	3.85	1.04	3.86	1.02	0.02	0.43	0.78	59	98	0.78	3.74	0.98	0.43	0.78	59	98	3.73	0.95	-0.11	0.81	0.00	0.03
SP001606	2,382	3.83	0.98	3.83	0.99	0.01	0.44	0.76	60	98	0.76	3.81	0.99	0.44	0.77	60	98	3.82	0.95	-0.01	0.80	0.01	0.04
UA100002	2,362	3.81	1.01	3.80	1.00	-0.01	0.43	0.77	59	98	0.77	3.74	1.03	0.42	0.77	58	98	3.75	1.00	-0.06	0.80	0.00	0.03
UA100025	2,389	3.78	1.03	3.80	1.01	0.02	0.41	0.75	57	97	0.75	3.81	1.00	0.43	0.76	59	98	3.83	0.98	0.05	0.79	0.01	0.04
UA100033	277	3.95	0.86	3.89	0.93	-0.06	0.50	0.74	65	98	0.75	4.00	0.95	0.38	0.73	57	100	4.00	0.91	0.06	0.76	-0.01	0.01

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
UA100035	2,393	3.93	0.90	3.89	0.92	-0.04	0.43	0.73	61	98	0.74	3.84	0.95	0.41	0.73	59	98	3.84	0.91	-0.10	0.77	0.00	0.03
UA100048	1,966	3.85	0.97	3.86	0.98	0.01	0.43	0.75	60	98	0.75	3.82	0.96	0.39	0.74	57	98	3.81	0.92	-0.04	0.79	-0.01	0.04
UA100051	2,414	3.91	0.94	3.90	0.93	0.00	0.44	0.74	61	98	0.74	3.83	0.97	0.45	0.77	62	99	3.82	0.93	-0.09	0.80	0.03	0.06
UC100002	2,400	3.96	0.98	3.93	0.97	-0.03	0.42	0.75	59	98	0.75	4.01	0.99	0.43	0.77	59	99	4.02	0.95	0.06	0.80	0.02	0.05
UC100004	2,415	3.84	0.95	3.88	0.95	0.05	0.41	0.72	58	98	0.73	3.81	1.01	0.39	0.74	57	98	3.80	0.96	-0.04	0.78	0.02	0.05
UC100007	2,383	3.90	0.98	3.92	0.97	0.01	0.39	0.73	57	98	0.73	3.96	0.97	0.42	0.75	59	98	3.96	0.94	0.05	0.79	0.02	0.06
UC100009	1,520	3.81	0.99	3.80	1.00	-0.01	0.42	0.74	58	97	0.74	3.82	0.98	0.42	0.76	58	98	3.82	0.95	0.01	0.79	0.02	0.05
UC100010	2,400	3.84	0.98	3.82	0.96	-0.02	0.42	0.74	59	98	0.75	3.96	1.01	0.41	0.75	58	98	3.95	0.98	0.12	0.79	0.01	0.04
UC100012	2,402	3.89	1.00	3.89	1.02	-0.01	0.43	0.77	59	98	0.77	3.87	1.01	0.41	0.76	57	98	3.88	0.99	-0.02	0.79	-0.01	0.02
UC100016	2,374	3.90	0.96	3.89	0.97	-0.01	0.43	0.74	60	97	0.74	3.87	0.99	0.43	0.77	60	99	3.87	0.95	-0.02	0.80	0.03	0.06
UC100019	2,380	3.88	0.97	3.85	0.99	-0.03	0.42	0.74	59	97	0.74	3.89	0.96	0.41	0.75	58	98	3.89	0.93	0.01	0.78	0.01	0.04
UC100030	2,399	3.62	1.03	3.61	1.04	-0.02	0.41	0.76	57	97	0.76	3.66	1.05	0.44	0.78	59	98	3.66	1.02	0.03	0.81	0.02	0.05
UC100032	2,420	3.93	0.96	3.93	0.97	0.00	0.43	0.75	60	98	0.75	3.88	0.97	0.43	0.76	60	98	3.88	0.93	-0.06	0.80	0.01	0.05
VB152145	2,427	3.85	0.97	3.84	0.96	-0.01	0.42	0.74	59	98	0.74	3.83	0.99	0.42	0.76	59	98	3.82	0.96	-0.03	0.79	0.02	0.05
VB152147	1,940	3.74	0.93	3.72	0.94	-0.02	0.47	0.76	63	98	0.76	3.72	1.01	0.41	0.75	59	98	3.71	0.97	-0.03	0.79	-0.01	0.03
VB152148	2,410	3.86	0.98	3.88	0.98	0.03	0.44	0.75	60	97	0.75	3.86	1.01	0.43	0.76	59	98	3.86	0.97	0.00	0.79	0.01	0.04
VB152149	2,423	3.72	0.98	3.72	0.97	0.00	0.43	0.75	60	97	0.75	3.77	1.05	0.40	0.76	57	98	3.76	1.01	0.04	0.79	0.01	0.04
VB156807	842	3.90	0.97	3.89	0.97	-0.01	0.47	0.75	63	97	0.75	3.92	0.94	0.44	0.75	60	98	3.90	0.91	0.00	0.77	0.00	0.02
VB156813	2,410	3.83	0.99	3.84	0.97	0.01	0.42	0.75	59	98	0.75	3.80	0.98	0.42	0.76	59	98	3.80	0.94	-0.02	0.80	0.01	0.05

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
VB161438	2,415	3.89	0.95	3.92	0.97	0.03	0.43	0.74	60	98	0.74	3.81	0.99	0.42	0.77	59	99	3.81	0.97	-0.09	0.81	0.03	0.07
VB161440	2,440	3.81	0.96	3.84	0.97	0.02	0.41	0.73	58	97	0.73	3.93	0.98	0.41	0.75	58	98	3.93	0.95	0.12	0.79	0.02	0.06
VB161442	1,148	3.79	0.99	3.84	0.99	0.05	0.42	0.75	58	98	0.75	3.78	1.00	0.41	0.76	58	98	3.79	0.95	0.01	0.79	0.01	0.04
VB161444	2,406	3.76	0.94	3.78	0.94	0.02	0.43	0.74	60	98	0.74	3.85	1.00	0.41	0.75	58	98	3.84	0.96	0.08	0.79	0.01	0.05
VB169268	1,806	3.94	0.96	3.95	0.96	0.00	0.41	0.75	59	98	0.75	3.99	0.96	0.44	0.76	61	98	3.99	0.93	0.04	0.79	0.01	0.04
VB169271	2,377	3.83	0.96	3.85	0.95	0.02	0.42	0.74	59	98	0.74	3.81	1.00	0.41	0.76	58	98	3.82	0.95	-0.01	0.79	0.02	0.05
VB184348	2,415	3.89	0.92	3.91	0.92	0.02	0.42	0.72	60	98	0.72	4.03	0.95	0.40	0.73	58	98	4.04	0.91	0.16	0.77	0.01	0.05
VB346294	2,391	3.90	0.95	3.90	0.96	0.00	0.42	0.74	60	98	0.74	4.00	0.99	0.46	0.77	62	98	3.99	0.95	0.10	0.80	0.03	0.06
VB346297	2,004	3.72	0.94	3.74	0.98	0.02	0.41	0.74	58	98	0.74	3.71	1.03	0.41	0.75	58	98	3.70	1.00	-0.03	0.78	0.01	0.04
VB346299	2,374	3.87	0.97	3.86	0.97	-0.01	0.42	0.74	59	98	0.74	3.87	1.03	0.41	0.76	58	98	3.89	1.00	0.02	0.80	0.02	0.06
VB421803	2,380	3.81	0.88	3.83	0.90	0.03	0.43	0.71	61	98	0.72	3.77	0.95	0.46	0.75	63	98	3.78	0.91	-0.03	0.79	0.04	0.07
VB445387	2,437	3.76	0.93	3.76	0.94	0.00	0.44	0.74	61	98	0.74	3.82	0.99	0.42	0.75	59	98	3.82	0.96	0.06	0.78	0.01	0.04
VB445389	2,388	3.79	0.96	3.84	0.95	0.05	0.39	0.73	57	98	0.73	3.78	0.96	0.46	0.77	62	99	3.79	0.93	0.00	0.80	0.04	0.07
VB445390	1,783	3.67	0.95	3.68	0.93	0.01	0.44	0.74	61	98	0.74	3.57	1.01	0.45	0.77	61	98	3.57	0.99	-0.10	0.80	0.03	0.06
VB445394	2,100	3.84	0.98	3.85	0.96	0.01	0.41	0.73	58	97	0.73	3.89	0.97	0.41	0.75	59	98	3.88	0.94	0.04	0.78	0.02	0.05
VB445395	2,423	3.97	0.94	3.98	0.95	0.01	0.42	0.73	59	97	0.73	4.05	0.98	0.41	0.74	59	98	4.04	0.94	0.08	0.77	0.01	0.04
VB446206	2,390	3.95	0.97	3.94	0.99	-0.01	0.41	0.74	58	98	0.74	3.92	0.97	0.41	0.75	58	98	3.93	0.94	-0.02	0.79	0.01	0.05
VB446946	2,415	3.79	0.99	3.79	0.98	0.00	0.42	0.75	59	98	0.75	3.76	1.00	0.41	0.75	58	98	3.76	0.96	-0.03	0.79	0.00	0.04
VB446947	2,448	3.89	0.93	3.86	0.93	-0.03	0.44	0.73	61	98	0.73	3.85	0.98	0.40	0.74	58	98	3.85	0.93	-0.04	0.78	0.01	0.05

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
VB446948	2,420	3.96	0.95	3.94	0.95	-0.02	0.40	0.74	58	98	0.74	3.88	0.99	0.40	0.76	58	99	3.88	0.95	-0.09	0.80	0.02	0.06
VB446950	1,739	3.96	1.01	3.98	1.00	0.02	0.40	0.75	57	98	0.75	3.95	0.97	0.43	0.77	60	99	3.94	0.94	-0.02	0.81	0.02	0.06
VB461801	1,572	4.02	0.94	3.95	0.90	-0.07	0.42	0.72	60	98	0.72	3.91	0.95	0.42	0.75	60	98	3.92	0.92	-0.11	0.79	0.03	0.07
VB462963	1,428	4.12	0.97	4.07	0.96	-0.05	0.45	0.75	61	98	0.75	4.06	0.91	0.44	0.75	61	98	4.08	0.89	-0.05	0.79	0.00	0.04
VB462965	616	3.90	0.95	3.85	0.91	-0.05	0.47	0.76	63	98	0.76	3.87	0.98	0.45	0.77	62	98	3.85	0.95	-0.05	0.80	0.01	0.04
VB462966	2,404	3.87	1.00	3.87	0.98	0.00	0.39	0.73	56	97	0.73	3.92	0.97	0.42	0.76	59	98	3.92	0.94	0.05	0.79	0.03	0.06

Note. Shaded cells indicate values that failed to meet the threshold. adj = adjacent, H1 = Human 1, H2 = Human 2, std diff = standardized difference, wtd kappa = weighted kappa.

Table F2

Agreement With Human Scores on Issue Prompts: Generic Prompt-Specific Intercept (GPSI) Model

		H1 by H2										H1 by e-rater (rounded to integers)							H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater							e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
Average	2,070	3.85	0.96	3.86	0.96	0.00	0.42	0.74	59.39	97.69	0.74	3.85	0.98	0.42	0.76	59.32	98.26	3.85	0.95	0.00	0.79	0.02	0.05
AJ000627	1,655	3.78	0.94	3.77	0.94	0.00	0.42	0.74	59.58	98.07	0.74	3.74	0.94	0.41	0.73	58.91	98.01	3.74	0.93	-0.04	0.77	-0.01	0.03
AJ000628	1,488	3.85	0.92	3.84	0.91	-0.01	0.41	0.71	58.94	97.51	0.71	3.80	0.95	0.39	0.72	57.53	97.78	3.81	0.91	-0.04	0.76	0.01	0.05
AJ000629	2,397	3.87	0.90	3.89	0.91	0.03	0.45	0.74	62.58	98.71	0.74	3.88	1.00	0.44	0.76	61.08	98.54	3.88	0.97	0.01	0.80	0.02	0.06
DH002327	707	3.84	0.99	3.91	1.00	0.07	0.40	0.74	57.28	97.60	0.74	3.89	0.93	0.43	0.76	59.97	98.30	3.88	0.92	0.04	0.79	0.02	0.05
DH002330	2,392	3.81	0.98	3.82	1.02	0.01	0.42	0.75	58.19	97.53	0.75	3.82	1.01	0.43	0.77	59.28	98.37	3.82	0.97	0.01	0.80	0.02	0.05
DH002334	2,415	3.72	1.00	3.76	1.00	0.04	0.46	0.77	60.91	97.60	0.77	3.76	1.04	0.44	0.78	59.50	98.34	3.76	1.01	0.03	0.82	0.01	0.05
DH002335	2,392	4.02	1.00	4.00	0.99	-0.02	0.40	0.73	57.57	97.03	0.73	3.96	0.96	0.42	0.76	59.24	98.45	3.96	0.93	-0.06	0.79	0.03	0.06
DH002353	2,402	3.81	0.98	3.79	0.96	-0.03	0.44	0.75	60.32	97.63	0.75	3.76	1.01	0.44	0.76	60.41	97.75	3.76	0.97	-0.06	0.79	0.01	0.04
DH002354	2,394	3.90	0.96	3.90	0.94	0.00	0.41	0.73	58.44	97.70	0.73	3.88	0.97	0.44	0.77	60.40	98.83	3.88	0.95	-0.02	0.80	0.04	0.07
DH002357	2,420	3.80	1.01	3.81	1.00	0.01	0.43	0.75	59.13	96.98	0.75	3.83	1.02	0.42	0.77	58.43	98.35	3.82	1.00	0.02	0.80	0.02	0.05
GM001518	2,407	3.94	0.89	3.92	0.90	-0.02	0.44	0.74	62.48	98.42	0.74	3.91	0.95	0.43	0.75	60.95	98.63	3.91	0.91	-0.03	0.78	0.01	0.04
GM001520	2,402	3.87	0.99	3.82	0.99	-0.05	0.41	0.74	57.74	97.21	0.74	3.86	1.06	0.42	0.77	58.33	97.67	3.86	1.02	-0.02	0.80	0.03	0.06
GM001521	548	3.79	0.94	3.76	0.95	-0.03	0.42	0.74	59.31	97.99	0.74	3.74	0.97	0.38	0.72	56.02	97.63	3.74	0.95	-0.05	0.77	-0.02	0.03
GM001524	2,404	3.87	0.99	3.86	1.00	-0.01	0.41	0.74	57.70	97.09	0.74	3.84	1.04	0.44	0.78	59.40	98.21	3.84	1.01	-0.03	0.81	0.04	0.07

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
GM001527	2,429	3.78	1.00	3.77	1.01	-0.01	0.46	0.76	60.97	97.12	0.76	3.83	1.02	0.43	0.76	58.83	97.65	3.83	0.99	0.05	0.79	0.00	0.03
GM001529	2,361	3.90	0.96	3.90	0.97	-0.01	0.40	0.74	58.20	97.76	0.74	3.87	0.99	0.41	0.76	58.45	98.43	3.87	0.96	-0.03	0.79	0.02	0.05
GM001531	1,403	3.86	0.98	3.89	0.94	0.03	0.42	0.72	58.80	96.72	0.72	3.88	0.91	0.37	0.71	55.74	97.51	3.87	0.87	0.01	0.75	-0.01	0.03
GM001545	2,103	3.78	1.00	3.77	1.02	0.00	0.40	0.75	56.97	97.19	0.75	3.78	1.03	0.44	0.77	59.25	97.57	3.78	1.00	0.00	0.80	0.02	0.05
GM001551	2,374	3.84	0.97	3.84	0.95	0.00	0.43	0.74	60.11	97.60	0.74	3.84	1.00	0.44	0.78	60.57	98.86	3.83	0.97	-0.02	0.81	0.04	0.07
GM001552	2,427	3.71	1.04	3.75	1.02	0.04	0.40	0.76	56.61	97.69	0.76	3.74	1.04	0.43	0.77	58.34	97.82	3.73	1.01	0.02	0.80	0.01	0.04
GM001563	2,381	3.92	0.88	3.95	0.89	0.03	0.44	0.73	62.49	98.19	0.73	3.88	0.92	0.41	0.72	60.10	98.36	3.88	0.87	-0.05	0.77	-0.01	0.04
GM001565	2,412	3.79	0.91	3.77	0.91	-0.02	0.40	0.72	59.00	98.47	0.72	3.77	0.98	0.43	0.75	60.20	98.51	3.76	0.95	-0.03	0.79	0.03	0.07
GM010292	378	3.91	0.97	3.99	0.97	0.08	0.34	0.68	53.44	96.03	0.69	3.91	0.92	0.44	0.76	61.11	98.68	3.92	0.87	0.02	0.79	0.08	0.10
GM010295	2,421	3.94	0.98	3.96	0.97	0.02	0.44	0.76	60.59	97.98	0.76	3.98	1.00	0.44	0.77	60.51	98.10	3.98	0.98	0.04	0.80	0.01	0.04
HP010125	2,410	3.93	0.95	3.90	0.97	-0.04	0.42	0.73	59.67	97.22	0.73	3.92	0.96	0.42	0.74	59.67	97.76	3.92	0.91	-0.02	0.78	0.01	0.05
HP010128	2,423	3.80	0.94	3.79	0.92	-0.01	0.43	0.74	60.67	98.35	0.74	3.80	0.96	0.45	0.76	61.37	98.27	3.80	0.93	0.00	0.79	0.02	0.05
HP010132	1,392	3.79	1.01	3.79	1.00	0.01	0.37	0.73	55.24	97.05	0.73	3.79	1.00	0.41	0.75	58.12	97.49	3.79	0.98	0.00	0.79	0.02	0.06
HP010134	2,406	3.87	0.99	3.86	0.98	-0.01	0.41	0.74	58.10	97.51	0.74	3.86	1.00	0.43	0.75	58.89	97.46	3.86	0.96	-0.01	0.78	0.01	0.04
HP010142	2,397	4.01	0.92	4.00	0.95	-0.01	0.42	0.73	59.53	98.21	0.74	4.02	0.95	0.43	0.74	60.33	98.25	4.02	0.91	0.01	0.77	0.01	0.03
HP010144	1,014	3.92	0.98	3.93	0.98	0.01	0.40	0.72	57.10	96.45	0.72	3.96	0.99	0.39	0.75	56.71	98.13	3.96	0.95	0.04	0.78	0.03	0.06
HP010146	2,419	3.88	0.94	3.88	0.94	0.00	0.45	0.74	61.39	97.56	0.74	3.90	0.98	0.45	0.76	61.14	98.43	3.88	0.96	0.00	0.79	0.02	0.05
HP010148	2,394	3.98	0.88	3.97	0.89	-0.01	0.42	0.72	61.11	98.20	0.72	3.95	0.94	0.44	0.75	61.82	98.66	3.94	0.91	-0.04	0.78	0.03	0.06

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
HP010187	2,390	3.95	0.95	3.94	0.97	0.00	0.44	0.75	60.84	97.74	0.75	3.93	0.98	0.44	0.76	60.79	98.16	3.92	0.95	-0.02	0.79	0.01	0.04
HP010190	2,423	3.76	1.01	3.77	0.99	0.01	0.43	0.76	59.18	97.94	0.76	3.78	1.08	0.44	0.79	59.39	98.23	3.78	1.05	0.01	0.81	0.03	0.05
HP010191	2,408	3.88	0.89	3.92	0.91	0.05	0.40	0.70	58.93	97.59	0.70	3.87	0.92	0.43	0.73	61.25	98.30	3.88	0.89	0.01	0.78	0.03	0.08
HP010192	1,568	3.88	0.92	3.87	0.92	-0.01	0.44	0.74	61.16	98.28	0.74	3.90	0.95	0.42	0.75	59.76	98.60	3.90	0.91	0.02	0.78	0.01	0.04
HP010196	2,431	3.84	0.96	3.85	0.96	0.01	0.43	0.75	59.93	98.19	0.75	3.86	0.98	0.43	0.76	59.89	98.27	3.85	0.93	0.02	0.79	0.01	0.04
HP010198	1,540	3.83	0.93	3.77	0.92	-0.06	0.39	0.72	58.18	98.05	0.72	3.76	0.95	0.39	0.74	57.66	98.51	3.76	0.90	-0.07	0.78	0.02	0.06
HP010224	2,107	3.70	1.00	3.69	0.99	-0.01	0.44	0.77	59.66	98.20	0.77	3.69	1.02	0.44	0.78	59.85	98.10	3.68	1.00	-0.02	0.81	0.01	0.04
LY000567	2,442	3.86	0.93	3.83	0.95	-0.03	0.45	0.76	61.34	98.98	0.76	3.83	0.99	0.43	0.76	60.11	98.28	3.83	0.95	-0.03	0.79	0.00	0.03
LY000568	956	3.96	1.00	3.97	0.93	0.01	0.44	0.76	60.46	98.74	0.77	4.00	0.98	0.43	0.77	59.21	98.85	4.00	0.94	0.03	0.80	0.01	0.03
LY000572	2,407	3.78	0.96	3.77	0.97	-0.01	0.46	0.75	61.82	97.17	0.75	3.76	0.99	0.42	0.75	58.70	97.88	3.76	0.97	-0.02	0.79	0.00	0.04
LY000576	2,398	3.79	0.93	3.78	0.95	-0.01	0.39	0.71	57.71	97.04	0.71	3.75	0.96	0.39	0.74	57.88	98.46	3.75	0.92	-0.04	0.78	0.03	0.07
LY000580	701	3.82	0.99	3.82	1.01	0.00	0.48	0.77	62.91	97.00	0.77	3.87	1.02	0.43	0.78	58.92	98.72	3.86	0.99	0.04	0.81	0.01	0.04
LY000582	2,380	3.79	0.96	3.82	0.95	0.03	0.44	0.75	60.67	98.15	0.76	3.81	0.97	0.45	0.77	60.97	98.40	3.82	0.95	0.02	0.80	0.02	0.04
LY000584	1,709	3.82	0.96	3.83	0.94	0.02	0.42	0.73	58.86	97.48	0.73	3.84	1.00	0.45	0.77	60.44	98.36	3.83	0.96	0.02	0.80	0.04	0.07
LY000585	2,374	4.03	0.99	4.03	1.02	-0.01	0.43	0.77	58.97	98.23	0.77	4.04	0.97	0.49	0.80	63.69	99.20	4.04	0.95	0.01	0.83	0.03	0.06
LY000587	2,409	3.79	0.96	3.81	0.97	0.02	0.41	0.73	58.86	97.59	0.73	3.77	0.99	0.43	0.76	59.53	98.26	3.76	0.96	-0.03	0.79	0.03	0.06
LY000590	2,392	3.79	0.97	3.78	0.99	-0.01	0.42	0.75	58.70	98.04	0.75	3.82	0.98	0.42	0.75	59.07	97.87	3.80	0.96	0.01	0.79	0.00	0.04
LY000591	489	3.79	0.98	3.83	0.95	0.04	0.47	0.77	62.78	97.96	0.77	3.79	0.98	0.43	0.76	59.30	98.36	3.79	0.96	-0.01	0.78	-0.01	0.01

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
LY000597	980	3.78	0.99	3.71	0.99	-0.08	0.44	0.75	59.59	97.04	0.75	3.73	1.00	0.45	0.78	60.31	98.67	3.74	0.97	-0.04	0.80	0.03	0.05
LY000598	2,439	3.88	0.98	3.87	0.97	-0.01	0.44	0.75	60.11	97.50	0.75	3.86	1.01	0.45	0.78	60.89	98.56	3.85	0.98	-0.03	0.81	0.03	0.06
LY000599	1,369	3.95	0.96	3.92	0.93	-0.02	0.40	0.73	58.22	97.81	0.73	3.93	0.95	0.41	0.75	58.44	98.76	3.94	0.92	-0.01	0.79	0.02	0.06
LY000600	489	3.90	1.02	3.99	1.03	0.09	0.39	0.73	56.24	96.32	0.74	3.99	0.97	0.43	0.73	59.30	96.11	3.99	0.94	0.08	0.77	0.00	0.03
LY000611	2,384	3.88	0.98	3.91	0.94	0.03	0.44	0.73	60.23	97.53	0.74	3.90	0.93	0.44	0.75	60.78	97.86	3.91	0.90	0.03	0.79	0.02	0.05
LY000631	2,416	3.93	0.99	3.93	1.00	0.01	0.42	0.75	58.49	97.27	0.75	3.88	0.98	0.39	0.75	56.83	98.14	3.87	0.94	-0.06	0.79	0.00	0.04
LY000632	2,376	3.92	0.95	3.94	0.95	0.02	0.40	0.73	57.83	97.98	0.73	3.91	1.00	0.44	0.77	60.48	98.61	3.90	0.97	-0.02	0.81	0.04	0.08
LY000633	2,394	3.90	0.97	3.90	0.97	0.00	0.41	0.73	57.98	97.62	0.73	3.91	0.98	0.42	0.75	58.69	98.25	3.91	0.95	0.01	0.78	0.02	0.05
LY000641	2,404	3.74	0.97	3.75	0.98	0.00	0.42	0.75	58.90	98.21	0.75	3.78	1.00	0.41	0.76	58.07	98.63	3.79	0.97	0.05	0.79	0.01	0.04
LY000646	2,406	3.80	0.93	3.82	0.95	0.02	0.42	0.74	59.64	98.17	0.74	3.81	1.00	0.41	0.75	58.31	98.13	3.80	0.97	0.00	0.79	0.01	0.05
LY000647	2,395	3.74	0.96	3.75	0.95	0.00	0.42	0.74	59.21	98.08	0.74	3.75	1.00	0.41	0.75	57.87	98.12	3.75	0.96	0.01	0.79	0.01	0.05
LY000648	760	3.79	0.95	3.85	0.95	0.07	0.40	0.71	58.42	96.97	0.72	3.88	0.99	0.43	0.76	59.61	98.03	3.86	0.95	0.08	0.80	0.05	0.08
LY000650	2,389	3.83	0.93	3.83	0.93	-0.01	0.46	0.75	62.29	97.95	0.75	3.81	0.97	0.42	0.75	58.94	98.58	3.80	0.94	-0.03	0.79	0.00	0.04
NB007538	2,407	3.82	0.94	3.81	0.93	-0.01	0.43	0.74	60.07	98.05	0.74	3.81	0.96	0.46	0.77	62.15	98.96	3.80	0.93	-0.02	0.80	0.03	0.06
NB007545	2,388	3.85	1.04	3.86	1.02	0.02	0.43	0.78	58.67	97.99	0.78	3.87	1.00	0.44	0.78	59.84	98.16	3.87	0.96	0.03	0.81	0.00	0.03
SP001606	2,382	3.83	0.98	3.83	0.99	0.01	0.44	0.76	59.87	98.03	0.76	3.84	0.99	0.45	0.77	60.41	98.07	3.83	0.95	0.01	0.80	0.01	0.04
UA100002	2,362	3.81	1.01	3.80	1.00	-0.01	0.43	0.77	58.72	98.05	0.77	3.77	1.02	0.42	0.77	57.96	98.18	3.77	1.00	-0.03	0.80	0.00	0.03
UA100025	2,389	3.78	1.03	3.80	1.01	0.02	0.41	0.75	57.35	97.15	0.75	3.78	1.00	0.43	0.76	58.98	97.74	3.78	0.98	0.01	0.79	0.01	0.04

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
UA100033	277	3.95	0.86	3.89	0.93	-0.06	0.50	0.74	64.98	97.83	0.75	3.92	0.96	0.39	0.72	57.76	98.92	3.92	0.91	-0.04	0.76	-0.02	0.01
UA100035	2,393	3.93	0.90	3.89	0.92	-0.04	0.43	0.73	61.01	98.33	0.74	3.91	0.95	0.41	0.73	59.59	98.20	3.91	0.92	-0.02	0.77	0.00	0.03
UA100048	1,966	3.85	0.97	3.86	0.98	0.01	0.43	0.75	59.61	97.71	0.75	3.89	0.96	0.40	0.75	58.09	98.17	3.89	0.92	0.04	0.79	0.00	0.04
UA100051	2,414	3.91	0.94	3.90	0.93	0.00	0.44	0.74	60.89	97.80	0.74	3.92	0.97	0.46	0.77	62.01	98.72	3.90	0.93	0.00	0.80	0.03	0.06
UC100002	2,400	3.96	0.98	3.93	0.97	-0.03	0.42	0.75	59.17	98.00	0.75	3.94	0.98	0.42	0.76	59.13	98.46	3.95	0.95	-0.01	0.80	0.01	0.05
UC100004	2,415	3.84	0.95	3.88	0.95	0.05	0.41	0.72	58.26	97.52	0.73	3.86	1.00	0.39	0.74	56.73	98.22	3.85	0.97	0.02	0.78	0.02	0.05
UC100007	2,383	3.90	0.98	3.92	0.97	0.01	0.39	0.73	56.74	97.52	0.73	3.92	0.96	0.42	0.75	59.21	98.03	3.92	0.94	0.02	0.79	0.02	0.06
UC100009	1,520	3.81	0.99	3.80	1.00	-0.01	0.42	0.74	58.16	97.04	0.74	3.80	0.98	0.41	0.76	57.96	98.55	3.81	0.95	-0.01	0.79	0.02	0.05
UC100010	2,400	3.84	0.98	3.82	0.96	-0.02	0.42	0.74	58.54	97.83	0.75	3.76	1.01	0.42	0.76	58.88	98.04	3.76	0.97	-0.08	0.79	0.02	0.04
UC100012	2,402	3.89	1.00	3.89	1.02	-0.01	0.43	0.77	59.08	97.92	0.77	3.92	1.01	0.40	0.76	56.83	98.08	3.92	0.99	0.03	0.79	-0.01	0.02
UC100016	2,374	3.90	0.96	3.89	0.97	-0.01	0.43	0.74	59.56	97.43	0.74	3.85	0.99	0.42	0.77	59.35	98.69	3.86	0.95	-0.04	0.80	0.03	0.06
UC100019	2,380	3.88	0.97	3.85	0.99	-0.03	0.42	0.74	58.61	97.23	0.74	3.85	0.96	0.40	0.75	57.73	98.19	3.85	0.93	-0.04	0.78	0.01	0.04
UC100030	2,399	3.62	1.03	3.61	1.04	-0.02	0.41	0.76	56.94	97.25	0.76	3.64	1.05	0.43	0.78	58.82	97.96	3.64	1.02	0.01	0.81	0.02	0.05
UC100032	2,420	3.93	0.96	3.93	0.97	0.00	0.43	0.75	60.12	97.60	0.75	3.96	0.97	0.44	0.76	60.58	98.51	3.95	0.93	0.02	0.80	0.01	0.05
VB152145	2,427	3.85	0.97	3.84	0.96	-0.01	0.42	0.74	59.29	97.78	0.74	3.83	0.98	0.42	0.76	58.92	98.27	3.83	0.96	-0.03	0.79	0.02	0.05
VB152147	1,940	3.74	0.93	3.72	0.94	-0.02	0.47	0.76	62.94	98.30	0.76	3.72	1.01	0.41	0.75	58.61	98.40	3.72	0.97	-0.03	0.79	-0.01	0.03
VB152148	2,410	3.86	0.98	3.88	0.98	0.03	0.44	0.75	59.75	97.30	0.75	3.85	1.01	0.43	0.76	58.96	98.09	3.85	0.97	0.00	0.79	0.01	0.04
VB152149	2,423	3.72	0.98	3.72	0.97	0.00	0.43	0.75	59.64	97.48	0.75	3.72	1.04	0.41	0.76	57.37	98.10	3.72	1.01	0.00	0.79	0.01	0.04

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
VB156807	842	3.90	0.97	3.89	0.97	-0.01	0.47	0.75	63.06	97.27	0.75	3.96	0.95	0.42	0.74	59.26	98.10	3.95	0.91	0.05	0.77	-0.01	0.02
VB156813	2,410	3.83	0.99	3.84	0.97	0.01	0.42	0.75	59.21	97.59	0.75	3.81	0.98	0.43	0.77	59.54	98.42	3.81	0.94	-0.01	0.80	0.02	0.05
VB161438	2,415	3.89	0.95	3.92	0.97	0.03	0.43	0.74	59.71	97.81	0.74	3.93	1.00	0.43	0.76	59.17	98.88	3.92	0.97	0.03	0.81	0.02	0.07
VB161440	2,440	3.81	0.96	3.84	0.97	0.02	0.41	0.73	58.03	97.30	0.73	3.78	0.97	0.41	0.75	58.57	98.48	3.79	0.94	-0.02	0.79	0.02	0.06
VB161442	1,148	3.79	0.99	3.84	0.99	0.05	0.42	0.75	58.19	97.82	0.75	3.81	0.99	0.42	0.76	58.28	98.00	3.81	0.95	0.02	0.79	0.01	0.04
VB161444	2,406	3.76	0.94	3.78	0.94	0.02	0.43	0.74	60.10	98.13	0.74	3.75	1.00	0.40	0.75	57.98	98.50	3.74	0.96	-0.02	0.79	0.01	0.05
VB169268	1,806	3.94	0.96	3.95	0.96	0.00	0.41	0.75	58.91	98.12	0.75	3.95	0.96	0.44	0.76	61.02	98.17	3.95	0.93	0.01	0.79	0.01	0.04
VB169271	2,377	3.83	0.96	3.85	0.95	0.02	0.42	0.74	59.44	97.60	0.74	3.88	0.99	0.42	0.76	58.69	98.36	3.88	0.95	0.06	0.79	0.02	0.05
VB184348	2,415	3.89	0.92	3.91	0.92	0.02	0.42	0.72	60.17	97.89	0.72	3.88	0.94	0.40	0.73	58.72	98.51	3.87	0.91	-0.02	0.77	0.01	0.05
VB346294	2,391	3.90	0.95	3.90	0.96	0.00	0.42	0.74	59.51	97.53	0.74	3.89	0.99	0.46	0.78	61.65	98.79	3.89	0.95	-0.01	0.80	0.04	0.06
VB346297	2,004	3.72	0.94	3.74	0.98	0.02	0.41	0.74	58.43	97.90	0.74	3.80	1.04	0.40	0.75	56.79	97.95	3.78	1.00	0.06	0.78	0.01	0.04
VB346299	2,374	3.87	0.97	3.86	0.97	-0.01	0.42	0.74	59.10	97.81	0.74	3.91	1.03	0.41	0.76	57.88	98.19	3.92	1.00	0.05	0.80	0.02	0.06
VB421803	2,380	3.81	0.88	3.83	0.90	0.03	0.43	0.71	61.18	97.86	0.72	3.88	0.96	0.46	0.75	62.35	98.49	3.88	0.91	0.08	0.79	0.04	0.07
VB445387	2,437	3.76	0.93	3.76	0.94	0.00	0.44	0.74	60.89	97.99	0.74	3.80	0.99	0.42	0.75	58.68	98.15	3.80	0.96	0.04	0.78	0.01	0.04
VB445389	2,388	3.79	0.96	3.84	0.95	0.05	0.39	0.73	57.12	97.91	0.73	3.84	0.97	0.44	0.77	60.80	98.70	3.85	0.93	0.06	0.80	0.04	0.07
VB445390	1,783	3.67	0.95	3.68	0.93	0.01	0.44	0.74	60.96	97.87	0.74	3.70	1.01	0.44	0.76	60.07	98.26	3.70	0.99	0.03	0.80	0.02	0.06
VB445394	2,100	3.84	0.98	3.85	0.96	0.01	0.41	0.73	58.19	97.43	0.73	3.84	0.97	0.42	0.75	58.90	98.10	3.83	0.94	0.00	0.78	0.02	0.05

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
VB445395	2,423	3.97	0.94	3.98	0.95	0.01	0.42	0.73	59.10	97.44	0.73	3.95	0.97	0.40	0.74	57.94	97.94	3.94	0.94	-0.03	0.77	0.01	0.04
VB446206	2,390	3.95	0.97	3.94	0.99	-0.01	0.41	0.74	57.95	97.53	0.74	3.92	0.97	0.41	0.75	58.49	98.08	3.92	0.94	-0.02	0.79	0.01	0.05
VB446946	2,415	3.79	0.99	3.79	0.98	0.00	0.42	0.75	58.84	97.81	0.75	3.74	0.99	0.42	0.75	58.51	97.68	3.75	0.96	-0.04	0.79	0.00	0.04
VB446947	2,448	3.89	0.93	3.86	0.93	-0.03	0.44	0.73	61.27	97.79	0.73	3.85	0.98	0.41	0.74	58.21	98.45	3.85	0.93	-0.04	0.78	0.01	0.05
VB446948	2,420	3.96	0.95	3.94	0.95	-0.02	0.40	0.74	58.26	98.06	0.74	3.98	0.98	0.41	0.75	58.55	98.68	3.98	0.95	0.02	0.79	0.01	0.05
VB446950	1,739	3.96	1.01	3.98	1.00	0.02	0.40	0.75	57.22	97.53	0.75	3.96	0.97	0.43	0.77	60.03	98.39	3.96	0.94	0.00	0.81	0.02	0.06
VB461801	1,572	4.02	0.94	3.95	0.90	-0.07	0.42	0.72	60.11	97.52	0.72	3.92	0.95	0.43	0.75	60.05	98.35	3.93	0.92	-0.10	0.79	0.03	0.07
VB462963	1,428	4.12	0.97	4.07	0.96	-0.05	0.45	0.75	60.99	97.76	0.75	4.08	0.92	0.44	0.75	60.85	98.39	4.09	0.89	-0.03	0.79	0.00	0.04
VB462965	616	3.90	0.95	3.85	0.91	-0.05	0.47	0.76	63.15	98.38	0.76	3.89	0.98	0.46	0.77	61.85	98.21	3.88	0.95	-0.02	0.80	0.01	0.04
VB462966	2,404	3.87	1.00	3.87	0.98	0.00	0.39	0.73	55.99	97.05	0.73	3.84	0.97	0.42	0.76	58.57	98.46	3.83	0.93	-0.04	0.79	0.03	0.06

Note. Shaded cells indicate values that failed to meet the threshold. adj = adjacent, H1 = Human 1, H2 = Human 2, std diff = standardized difference , wtd = weighted.

Table F3

Agreement With Human Scores on Issue Prompts: Prompt-Specific (PS) Model

		H1 by H2										H1 by e-rater (rounded to integers)							H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater							e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
Average	2,070	3.85	0.96	3.86	0.96	0.00	0.42	0.74	59	98	0.74	3.83	1.00	0.44	0.77	60	99	3.82	0.96	-0.03	0.80	0.03	0.06
AJ000627	1,655	3.78	0.94	3.77	0.94	0.00	0.42	0.74	60	98	0.74	3.73	0.99	0.40	0.75	58	98	3.70	0.96	-0.08	0.78	0.01	0.04
AJ000628	1,488	3.85	0.92	3.84	0.91	-0.01	0.41	0.71	59	98	0.71	3.78	1.00	0.41	0.74	58	98	3.78	0.96	-0.08	0.78	0.03	0.07
AJ000629	2,397	3.87	0.90	3.89	0.91	0.03	0.45	0.74	63	99	0.74	3.86	0.97	0.46	0.76	63	99	3.87	0.92	0.00	0.80	0.02	0.06
DH002327	707	3.84	0.99	3.91	1.00	0.07	0.40	0.74	57	98	0.74	3.86	0.98	0.45	0.78	61	99	3.85	0.95	0.01	0.81	0.04	0.07
DH002330	2,392	3.81	0.98	3.82	1.02	0.01	0.42	0.75	58	98	0.75	3.81	1.02	0.45	0.78	61	99	3.82	0.98	0.01	0.81	0.03	0.06
DH002334	2,415	3.72	1.00	3.76	1.00	0.04	0.46	0.77	61	98	0.77	3.73	1.01	0.47	0.79	62	99	3.73	0.98	0.01	0.83	0.02	0.06
DH002335	2,392	4.02	1.00	4.00	0.99	-0.02	0.40	0.73	58	97	0.73	3.92	1.04	0.42	0.78	58	98	3.91	1.01	-0.11	0.81	0.05	0.08
DH002353	2,402	3.81	0.98	3.79	0.96	-0.03	0.44	0.75	60	98	0.75	3.72	1.06	0.44	0.78	59	98	3.72	1.03	-0.09	0.81	0.03	0.06
DH002354	2,394	3.90	0.96	3.90	0.94	0.00	0.41	0.73	58	98	0.73	3.88	1.03	0.46	0.79	61	99	3.87	0.99	-0.03	0.82	0.06	0.09
DH002357	2,420	3.80	1.01	3.81	1.00	0.01	0.43	0.75	59	97	0.75	3.83	1.05	0.44	0.79	59	99	3.81	1.02	0.01	0.82	0.04	0.07
GM001518	2,407	3.94	0.89	3.92	0.90	-0.02	0.44	0.74	62	98	0.74	3.89	0.96	0.44	0.75	61	99	3.89	0.93	-0.05	0.79	0.01	0.05
GM001520	2,402	3.87	0.99	3.82	0.99	-0.05	0.41	0.74	58	97	0.74	3.81	1.00	0.45	0.77	61	98	3.81	0.97	-0.06	0.81	0.03	0.07
GM001521	548	3.79	0.94	3.76	0.95	-0.03	0.42	0.74	59	98	0.74	3.73	1.01	0.39	0.76	57	99	3.73	0.99	-0.07	0.80	0.02	0.06
GM001524	2,404	3.87	0.99	3.86	1.00	-0.01	0.41	0.74	58	97	0.74	3.80	1.03	0.45	0.78	60	99	3.79	1.00	-0.08	0.82	0.04	0.08

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
GM001527	2,429	3.78	1.00	3.77	1.01	-0.01	0.46	0.76	61	97	0.76	3.80	1.05	0.43	0.77	59	98	3.80	1.02	0.02	0.80	0.01	0.04
GM001529	2,361	3.90	0.96	3.90	0.97	-0.01	0.40	0.74	58	98	0.74	3.85	0.97	0.43	0.76	60	99	3.86	0.93	-0.04	0.80	0.02	0.06
GM001531	1,403	3.86	0.98	3.89	0.94	0.03	0.42	0.72	59	97	0.72	3.83	1.00	0.41	0.76	58	98	3.83	0.98	-0.03	0.79	0.04	0.07
GM001545	2,103	3.78	1.00	3.77	1.02	0.00	0.40	0.75	57	97	0.75	3.72	1.06	0.43	0.78	58	98	3.73	1.02	-0.05	0.81	0.03	0.06
GM001551	2,374	3.84	0.97	3.84	0.95	0.00	0.43	0.74	60	98	0.74	3.78	0.97	0.45	0.78	62	99	3.78	0.94	-0.07	0.81	0.04	0.07
GM001552	2,427	3.71	1.04	3.75	1.02	0.04	0.40	0.76	57	98	0.76	3.68	1.06	0.43	0.79	59	98	3.67	1.04	-0.03	0.81	0.03	0.05
GM001563	2,381	3.92	0.88	3.95	0.89	0.03	0.44	0.73	62	98	0.73	3.85	0.92	0.44	0.74	62	99	3.85	0.88	-0.09	0.78	0.01	0.05
GM001565	2,412	3.79	0.91	3.77	0.91	-0.02	0.40	0.72	59	98	0.72	3.77	0.94	0.44	0.76	61	99	3.76	0.90	-0.03	0.79	0.04	0.07
GM010292	378	3.91	0.97	3.99	0.97	0.08	0.34	0.68	53	96	0.69	3.92	0.98	0.42	0.76	59	98	3.91	0.95	0.01	0.78	0.08	0.09
GM010295	2,421	3.94	0.98	3.96	0.97	0.02	0.44	0.76	61	98	0.76	3.97	1.05	0.42	0.77	59	98	3.97	1.04	0.03	0.81	0.01	0.05
HP010125	2,410	3.93	0.95	3.90	0.97	-0.04	0.42	0.73	60	97	0.73	3.89	1.01	0.44	0.76	60	98	3.89	0.98	-0.05	0.79	0.03	0.06
HP010128	2,423	3.80	0.94	3.79	0.92	-0.01	0.43	0.74	61	98	0.74	3.80	0.98	0.45	0.76	61	98	3.79	0.94	-0.01	0.80	0.02	0.06
HP010132	1,392	3.79	1.01	3.79	1.00	0.01	0.37	0.73	55	97	0.73	3.75	1.05	0.40	0.77	57	98	3.73	1.01	-0.05	0.80	0.04	0.07
HP010134	2,406	3.87	0.99	3.86	0.98	-0.01	0.41	0.74	58	98	0.74	3.86	0.98	0.44	0.76	60	98	3.86	0.94	-0.01	0.80	0.02	0.06
HP010142	2,397	4.01	0.92	4.00	0.95	-0.01	0.42	0.73	60	98	0.74	3.99	0.95	0.45	0.76	62	99	4.00	0.92	-0.01	0.79	0.03	0.05
HP010144	1,014	3.92	0.98	3.93	0.98	0.01	0.40	0.72	57	96	0.72	3.95	0.99	0.42	0.75	59	98	3.95	0.97	0.03	0.80	0.03	0.08
HP010146	2,419	3.88	0.94	3.88	0.94	0.00	0.45	0.74	61	98	0.74	3.85	0.96	0.46	0.77	63	99	3.85	0.93	-0.03	0.80	0.03	0.06
HP010148	2,394	3.98	0.88	3.97	0.89	-0.01	0.42	0.72	61	98	0.72	3.92	0.93	0.46	0.75	63	99	3.92	0.91	-0.07	0.79	0.03	0.07

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
HP010187	2,390	3.95	0.95	3.94	0.97	0.00	0.44	0.75	61	98	0.75	3.92	1.01	0.44	0.77	60	99	3.93	0.97	-0.02	0.81	0.02	0.06
HP010190	2,423	3.76	1.01	3.77	0.99	0.01	0.43	0.76	59	98	0.76	3.79	1.03	0.47	0.80	61	99	3.78	0.99	0.01	0.82	0.04	0.06
HP010191	2,408	3.88	0.89	3.92	0.91	0.05	0.40	0.70	59	98	0.70	3.88	0.97	0.45	0.75	62	98	3.89	0.94	0.01	0.79	0.05	0.09
HP010192	1,568	3.88	0.92	3.87	0.92	-0.01	0.44	0.74	61	98	0.74	3.86	0.93	0.45	0.76	62	99	3.86	0.90	-0.02	0.80	0.02	0.06
HP010196	2,431	3.84	0.96	3.85	0.96	0.01	0.43	0.75	60	98	0.75	3.85	0.99	0.44	0.77	60	99	3.84	0.95	0.00	0.80	0.02	0.05
HP010198	1,540	3.83	0.93	3.77	0.92	-0.06	0.39	0.72	58	98	0.72	3.73	0.93	0.40	0.74	59	99	3.74	0.90	-0.10	0.78	0.02	0.06
HP010224	2,107	3.70	1.00	3.69	0.99	-0.01	0.44	0.77	60	98	0.77	3.65	1.02	0.46	0.78	61	98	3.66	1.00	-0.05	0.82	0.01	0.05
LY000567	2,442	3.86	0.93	3.83	0.95	-0.03	0.45	0.76	61	99	0.76	3.82	1.02	0.44	0.77	61	99	3.82	0.97	-0.04	0.80	0.01	0.04
LY000568	956	3.96	1.00	3.97	0.93	0.01	0.44	0.76	60	99	0.77	3.96	1.01	0.45	0.78	60	98	3.96	0.97	-0.01	0.82	0.02	0.05
LY000572	2,407	3.78	0.96	3.77	0.97	-0.01	0.46	0.75	62	97	0.75	3.75	1.01	0.43	0.77	60	98	3.75	0.98	-0.04	0.80	0.02	0.05
LY000576	2,398	3.79	0.93	3.78	0.95	-0.01	0.39	0.71	58	97	0.71	3.72	0.96	0.40	0.74	58	98	3.71	0.92	-0.09	0.78	0.03	0.07
LY000580	701	3.82	0.99	3.82	1.01	0.00	0.48	0.77	63	97	0.77	3.88	0.98	0.45	0.78	61	99	3.86	0.93	0.04	0.82	0.01	0.05
LY000582	2,380	3.79	0.96	3.82	0.95	0.03	0.44	0.75	61	98	0.76	3.79	0.96	0.46	0.78	62	99	3.80	0.94	0.01	0.81	0.03	0.05
LY000584	1,709	3.82	0.96	3.83	0.94	0.02	0.42	0.73	59	97	0.73	3.80	0.99	0.45	0.77	61	99	3.80	0.94	-0.01	0.81	0.04	0.08
LY000585	2,374	4.03	0.99	4.03	1.02	-0.01	0.43	0.77	59	98	0.77	4.00	1.04	0.48	0.80	63	99	4.00	1.02	-0.03	0.83	0.03	0.06
LY000587	2,409	3.79	0.96	3.81	0.97	0.02	0.41	0.73	59	98	0.73	3.76	1.01	0.42	0.76	59	98	3.75	0.98	-0.04	0.79	0.03	0.06
LY000590	2,392	3.79	0.97	3.78	0.99	-0.01	0.42	0.75	59	98	0.75	3.77	1.03	0.42	0.77	59	98	3.76	1.00	-0.03	0.80	0.02	0.05
LY000591	489	3.79	0.98	3.83	0.95	0.04	0.47	0.77	63	98	0.77	3.74	0.93	0.43	0.77	60	99	3.75	0.92	-0.05	0.79	0.00	0.02

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
LY000597	980	3.78	0.99	3.71	0.99	-0.08	0.44	0.75	60	97	0.75	3.68	1.00	0.44	0.77	60	98	3.69	0.95	-0.09	0.81	0.02	0.06
LY000598	2,439	3.88	0.98	3.87	0.97	-0.01	0.44	0.75	60	98	0.75	3.82	1.03	0.44	0.78	60	99	3.82	1.00	-0.06	0.82	0.03	0.07
LY000599	1,369	3.95	0.96	3.92	0.93	-0.02	0.40	0.73	58	98	0.73	3.91	1.03	0.42	0.77	59	99	3.91	0.98	-0.04	0.80	0.04	0.07
LY000600	489	3.90	1.02	3.99	1.03	0.09	0.39	0.73	56	96	0.74	3.95	1.06	0.41	0.75	57	97	3.96	1.02	0.06	0.77	0.02	0.03
LY000611	2,384	3.88	0.98	3.91	0.94	0.03	0.44	0.73	60	98	0.74	3.84	0.99	0.45	0.77	61	98	3.85	0.95	-0.03	0.80	0.04	0.06
LY000631	2,416	3.93	0.99	3.93	1.00	0.01	0.42	0.75	58	97	0.75	3.84	1.04	0.41	0.76	57	98	3.84	1.01	-0.08	0.79	0.01	0.04
LY000632	2,376	3.92	0.95	3.94	0.95	0.02	0.40	0.73	58	98	0.73	3.88	1.02	0.45	0.78	61	99	3.88	0.98	-0.04	0.81	0.05	0.08
LY000633	2,394	3.90	0.97	3.90	0.97	0.00	0.41	0.73	58	98	0.73	3.90	1.01	0.43	0.76	59	98	3.89	0.98	-0.01	0.79	0.03	0.06
LY000641	2,404	3.74	0.97	3.75	0.98	0.00	0.42	0.75	59	98	0.75	3.77	1.00	0.42	0.77	58	99	3.77	0.96	0.02	0.81	0.02	0.06
LY000646	2,406	3.80	0.93	3.82	0.95	0.02	0.42	0.74	60	98	0.74	3.78	0.98	0.42	0.75	59	99	3.79	0.94	-0.02	0.79	0.01	0.05
LY000647	2,395	3.74	0.96	3.75	0.95	0.00	0.42	0.74	59	98	0.74	3.73	0.96	0.45	0.76	61	99	3.72	0.91	-0.03	0.80	0.02	0.06
LY000648	760	3.79	0.95	3.85	0.95	0.07	0.40	0.71	58	97	0.72	3.84	0.99	0.47	0.78	63	99	3.82	0.96	0.04	0.81	0.07	0.09
LY000650	2,389	3.83	0.93	3.83	0.93	-0.01	0.46	0.75	62	98	0.75	3.80	0.98	0.43	0.76	60	99	3.78	0.95	-0.05	0.79	0.01	0.04
NB007538	2,407	3.82	0.94	3.81	0.93	-0.01	0.43	0.74	60	98	0.74	3.80	0.97	0.47	0.78	63	99	3.79	0.93	-0.03	0.81	0.04	0.07
NB007545	2,388	3.85	1.04	3.86	1.02	0.02	0.43	0.78	59	98	0.78	3.84	1.05	0.47	0.80	62	99	3.84	1.01	-0.01	0.83	0.02	0.05
SP001606	2,382	3.83	0.98	3.83	0.99	0.01	0.44	0.76	60	98	0.76	3.81	0.98	0.46	0.77	61	98	3.81	0.95	-0.01	0.81	0.01	0.05
UA100002	2,362	3.81	1.01	3.80	1.00	-0.01	0.43	0.77	59	98	0.77	3.73	1.00	0.43	0.78	59	99	3.74	0.97	-0.07	0.82	0.01	0.05
UA100025	2,389	3.78	1.03	3.80	1.01	0.02	0.41	0.75	57	97	0.75	3.76	1.04	0.43	0.77	58	98	3.76	1.01	-0.02	0.81	0.02	0.06

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
UA100033	277	3.95	0.86	3.89	0.93	-0.06	0.50	0.74	65	98	0.75	3.90	0.96	0.39	0.73	57	99	3.91	0.94	-0.05	0.76	-0.01	0.01
UA100035	2,393	3.93	0.90	3.89	0.92	-0.04	0.43	0.73	61	98	0.74	3.88	0.96	0.42	0.74	60	98	3.87	0.94	-0.06	0.78	0.01	0.04
UA100048	1,966	3.85	0.97	3.86	0.98	0.01	0.43	0.75	60	98	0.75	3.85	0.97	0.43	0.77	60	99	3.84	0.93	-0.01	0.81	0.02	0.06
UA100051	2,414	3.91	0.94	3.90	0.93	0.00	0.44	0.74	61	98	0.74	3.89	1.00	0.46	0.78	62	99	3.90	0.96	-0.01	0.81	0.04	0.07
UC100002	2,400	3.96	0.98	3.93	0.97	-0.03	0.42	0.75	59	98	0.75	3.93	1.01	0.45	0.78	61	99	3.92	0.99	-0.04	0.82	0.03	0.07
UC100004	2,415	3.84	0.95	3.88	0.95	0.05	0.41	0.72	58	98	0.73	3.82	0.96	0.43	0.75	60	99	3.81	0.92	-0.03	0.79	0.03	0.06
UC100007	2,383	3.90	0.98	3.92	0.97	0.01	0.39	0.73	57	98	0.73	3.88	0.97	0.45	0.77	61	99	3.87	0.94	-0.03	0.81	0.04	0.08
UC100009	1,520	3.81	0.99	3.80	1.00	-0.01	0.42	0.74	58	97	0.74	3.78	1.06	0.40	0.77	56	98	3.78	1.03	-0.03	0.80	0.03	0.06
UC100010	2,400	3.84	0.98	3.82	0.96	-0.02	0.42	0.74	59	98	0.75	3.72	1.06	0.40	0.77	57	98	3.72	1.03	-0.12	0.81	0.03	0.06
UC100012	2,402	3.89	1.00	3.89	1.02	-0.01	0.43	0.77	59	98	0.77	3.89	1.06	0.44	0.78	59	98	3.88	1.03	-0.01	0.81	0.01	0.04
UC100016	2,374	3.90	0.96	3.89	0.97	-0.01	0.43	0.74	60	97	0.74	3.83	1.01	0.45	0.78	61	99	3.83	0.98	-0.07	0.81	0.04	0.07
UC100019	2,380	3.88	0.97	3.85	0.99	-0.03	0.42	0.74	59	97	0.74	3.82	1.03	0.39	0.76	56	98	3.82	0.99	-0.07	0.80	0.02	0.06
UC100030	2,399	3.62	1.03	3.61	1.04	-0.02	0.41	0.76	57	97	0.76	3.64	1.05	0.45	0.79	60	98	3.63	1.02	0.01	0.82	0.03	0.06
UC100032	2,420	3.93	0.96	3.93	0.97	0.00	0.43	0.75	60	98	0.75	3.89	0.98	0.47	0.78	62	99	3.89	0.93	-0.04	0.81	0.03	0.06
VB152145	2,427	3.85	0.97	3.84	0.96	-0.01	0.42	0.74	59	98	0.74	3.83	1.02	0.42	0.78	59	99	3.83	0.99	-0.02	0.80	0.04	0.06
VB152147	1,940	3.74	0.93	3.72	0.94	-0.02	0.47	0.76	63	98	0.76	3.69	0.97	0.46	0.77	62	99	3.69	0.92	-0.06	0.80	0.01	0.04
VB152148	2,410	3.86	0.98	3.88	0.98	0.03	0.44	0.75	60	97	0.75	3.81	0.98	0.45	0.77	60	99	3.81	0.94	-0.05	0.80	0.02	0.05
VB152149	2,423	3.72	0.98	3.72	0.97	0.00	0.43	0.75	60	97	0.75	3.69	1.02	0.44	0.78	60	99	3.68	0.98	-0.04	0.81	0.03	0.06

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
VB156807	842	3.90	0.97	3.89	0.97	-0.01	0.47	0.75	63	97	0.75	3.92	0.99	0.40	0.75	57	99	3.91	0.95	0.01	0.78	0.00	0.03
VB156813	2,410	3.83	0.99	3.84	0.97	0.01	0.42	0.75	59	98	0.75	3.82	1.02	0.44	0.78	60	99	3.82	0.98	-0.01	0.81	0.03	0.06
VB161438	2,415	3.89	0.95	3.92	0.97	0.03	0.43	0.74	60	98	0.74	3.86	1.00	0.46	0.78	61	99	3.86	0.97	-0.04	0.81	0.04	0.07
VB161440	2,440	3.81	0.96	3.84	0.97	0.02	0.41	0.73	58	97	0.73	3.77	0.99	0.43	0.76	59	98	3.78	0.95	-0.03	0.79	0.03	0.06
VB161442	1,148	3.79	0.99	3.84	0.99	0.05	0.42	0.75	58	98	0.75	3.77	1.06	0.42	0.77	58	98	3.75	1.02	-0.03	0.81	0.02	0.06
VB161444	2,406	3.76	0.94	3.78	0.94	0.02	0.43	0.74	60	98	0.74	3.71	1.00	0.44	0.77	61	99	3.71	0.95	-0.05	0.80	0.03	0.06
VB169268	1,806	3.94	0.96	3.95	0.96	0.00	0.41	0.75	59	98	0.75	3.93	0.98	0.45	0.77	61	99	3.94	0.93	0.00	0.80	0.02	0.05
VB169271	2,377	3.83	0.96	3.85	0.95	0.02	0.42	0.74	59	98	0.74	3.85	1.05	0.42	0.77	59	98	3.85	1.02	0.03	0.80	0.03	0.06
VB184348	2,415	3.89	0.92	3.91	0.92	0.02	0.42	0.72	60	98	0.72	3.85	0.94	0.43	0.76	60	99	3.86	0.90	-0.04	0.79	0.04	0.07
VB346294	2,391	3.90	0.95	3.90	0.96	0.00	0.42	0.74	60	98	0.74	3.86	1.03	0.45	0.78	60	99	3.85	0.99	-0.05	0.81	0.04	0.07
VB346297	2,004	3.72	0.94	3.74	0.98	0.02	0.41	0.74	58	98	0.74	3.76	1.03	0.41	0.76	58	98	3.75	0.99	0.03	0.79	0.02	0.05
VB346299	2,374	3.87	0.97	3.86	0.97	-0.01	0.42	0.74	59	98	0.74	3.89	0.99	0.44	0.78	60	99	3.89	0.95	0.03	0.81	0.04	0.07
VB421803	2,380	3.81	0.88	3.83	0.90	0.03	0.43	0.71	61	98	0.72	3.85	0.91	0.48	0.76	65	99	3.86	0.85	0.06	0.79	0.05	0.07
VB445387	2,437	3.76	0.93	3.76	0.94	0.00	0.44	0.74	61	98	0.74	3.75	0.95	0.44	0.76	60	99	3.75	0.91	-0.01	0.80	0.02	0.06
VB445389	2,388	3.79	0.96	3.84	0.95	0.05	0.39	0.73	57	98	0.73	3.84	0.98	0.46	0.77	62	99	3.84	0.94	0.06	0.81	0.04	0.08
VB445390	1,783	3.67	0.95	3.68	0.93	0.01	0.44	0.74	61	98	0.74	3.70	0.93	0.46	0.76	62	99	3.69	0.89	0.03	0.81	0.02	0.07
VB445394	2,100	3.84	0.98	3.85	0.96	0.01	0.41	0.73	58	97	0.73	3.82	1.01	0.42	0.76	59	98	3.81	0.97	-0.03	0.79	0.03	0.06
VB445395	2,423	3.97	0.94	3.98	0.95	0.01	0.42	0.73	59	97	0.73	3.87	1.01	0.39	0.74	57	98	3.88	0.97	-0.10	0.78	0.01	0.05

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
VB446206	2,390	3.95	0.97	3.94	0.99	-0.01	0.41	0.74	58	98	0.74	3.88	1.03	0.42	0.77	59	98	3.88	0.99	-0.07	0.80	0.03	0.06
VB446946	2,415	3.79	0.99	3.79	0.98	0.00	0.42	0.75	59	98	0.75	3.70	1.00	0.42	0.77	59	99	3.71	0.96	-0.08	0.80	0.02	0.05
VB446947	2,448	3.89	0.93	3.86	0.93	-0.03	0.44	0.73	61	98	0.73	3.86	1.01	0.40	0.75	58	98	3.86	0.98	-0.03	0.78	0.02	0.05
VB446948	2,420	3.96	0.95	3.94	0.95	-0.02	0.40	0.74	58	98	0.74	3.96	0.97	0.43	0.77	60	99	3.97	0.93	0.01	0.80	0.03	0.06
VB446950	1,739	3.96	1.01	3.98	1.00	0.02	0.40	0.75	57	98	0.75	3.94	1.02	0.45	0.78	61	98	3.94	0.99	-0.03	0.82	0.03	0.07
VB461801	1,572	4.02	0.94	3.95	0.90	-0.07	0.42	0.72	60	98	0.72	3.89	0.97	0.45	0.77	62	99	3.88	0.93	-0.14	0.81	0.05	0.09
VB462963	1,428	4.12	0.97	4.07	0.96	-0.05	0.45	0.75	61	98	0.75	4.06	1.01	0.45	0.78	61	99	4.06	0.97	-0.06	0.81	0.03	0.06
VB462965	616	3.90	0.95	3.85	0.91	-0.05	0.47	0.76	63	98	0.76	3.87	1.00	0.47	0.77	63	98	3.86	0.96	-0.04	0.81	0.01	0.05
VB462966	2,404	3.87	1.00	3.87	0.98	0.00	0.39	0.73	56	97	0.73	3.80	1.01	0.43	0.77	59	98	3.80	0.98	-0.07	0.80	0.04	0.07

Note. Shaded cells indicate values that failed to meet the threshold. adj = adjacent, H1 = Human 1, H2 = Human 2, std diff = standardized difference, wtd = weighted

Table F4

Agreement With Human Scores on Argument Prompts: Generic (G) Model

		H1 by H2										H1 by e-rater (rounded to integers)							H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater							e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded - H1 by H2	H1 by e-rater unrounded - H1 by H2
Average	2,070	3.76	1.11	3.76	1.11	0.00	0.44	0.78	58	97	0.78	3.77	1.10	0.35	0.73	52	94	3.76	1.08	0.00	0.76	-0.06	-0.03
GM010069	1,226	3.57	1.16	3.56	1.13	0.00	0.45	0.79	58	97	0.79	3.85	1.16	0.31	0.66	47	90	3.83	1.15	0.23	0.71	-0.13	-0.08
GM010070	2,497	3.76	1.03	3.76	1.03	0.00	0.44	0.76	59	97	0.76	3.81	1.09	0.38	0.74	54	96	3.80	1.06	0.04	0.78	-0.02	0.02
GM010071	646	3.82	1.07	3.82	1.04	0.00	0.41	0.77	56	97	0.77	3.70	1.09	0.38	0.76	54	97	3.71	1.06	-0.10	0.78	-0.01	0.01
GM010072	2,489	3.60	1.10	3.62	1.11	0.01	0.44	0.76	58	96	0.76	3.66	1.07	0.31	0.68	48	94	3.66	1.05	0.05	0.71	-0.08	-0.05
GM010074	1,486	3.83	1.08	3.85	1.05	0.02	0.44	0.78	59	97	0.78	3.72	1.11	0.38	0.76	54	97	3.71	1.09	-0.11	0.79	-0.02	0.01
GM010082	2,495	3.70	1.11	3.71	1.10	0.01	0.45	0.79	59	97	0.79	3.88	1.14	0.37	0.74	53	95	3.87	1.11	0.15	0.77	-0.05	-0.02
GM010084	2,229	3.71	1.12	3.70	1.14	-0.01	0.44	0.77	57	96	0.77	3.83	1.13	0.35	0.72	51	94	3.82	1.11	0.10	0.75	-0.05	-0.02
GM010085	2,493	3.80	1.07	3.76	1.06	-0.04	0.45	0.78	59	97	0.78	3.76	1.15	0.38	0.76	54	96	3.75	1.12	-0.05	0.78	-0.02	0.00
IJ100114	1,486	3.68	1.09	3.67	1.07	-0.01	0.45	0.78	59	97	0.78	3.69	1.11	0.34	0.72	51	95	3.69	1.08	0.01	0.75	-0.06	-0.03
IJ100117	2,495	3.87	1.06	3.86	1.04	-0.01	0.43	0.75	58	96	0.75	3.81	1.07	0.36	0.72	53	95	3.80	1.05	-0.06	0.75	-0.03	0.00
IJ100118	2,494	3.87	1.03	3.85	1.06	-0.02	0.43	0.77	59	97	0.77	3.66	1.13	0.35	0.75	53	96	3.66	1.11	-0.20	0.79	-0.02	0.02
IJ100119	2,495	3.74	1.05	3.75	1.07	0.00	0.43	0.77	58	97	0.77	3.79	1.10	0.39	0.74	55	95	3.79	1.08	0.04	0.76	-0.03	-0.01
IJ100121	1,308	3.70	1.11	3.69	1.15	0.00	0.44	0.79	58	96	0.79	3.70	1.11	0.35	0.72	51	94	3.69	1.08	0.00	0.73	-0.07	-0.06
IJ100122	2,492	3.78	1.11	3.77	1.10	-0.01	0.46	0.78	60	97	0.78	3.85	1.13	0.38	0.74	54	95	3.84	1.11	0.06	0.76	-0.04	-0.02
NK000775	2,496	3.75	1.05	3.71	1.06	-0.03	0.44	0.76	59	96	0.76	3.64	1.06	0.33	0.71	51	95	3.63	1.04	-0.11	0.74	-0.05	-0.02

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded - H1 by H2	H1 by e-rater unrounded - H1 by H2
NK000776	2,493	3.71	1.06	3.69	1.06	-0.03	0.38	0.72	55	95	0.72	3.66	1.07	0.31	0.71	49	95	3.65	1.05	-0.06	0.73	-0.01	0.01
NK000777	2,499	3.86	1.06	3.84	1.08	-0.02	0.45	0.79	59	98	0.79	3.76	1.14	0.36	0.75	53	96	3.75	1.12	-0.10	0.78	-0.04	-0.01
NK000778	882	3.89	1.14	3.88	1.11	-0.01	0.41	0.77	55	95	0.77	3.82	1.10	0.37	0.74	52	94	3.82	1.08	-0.06	0.76	-0.03	-0.01
NK000780	2,496	3.69	1.09	3.70	1.10	0.01	0.42	0.77	56	96	0.77	3.75	1.12	0.37	0.74	53	95	3.75	1.09	0.05	0.76	-0.03	-0.01
NK000784	2,036	3.67	1.13	3.66	1.14	0.00	0.45	0.79	58	96	0.79	3.83	1.14	0.33	0.71	49	93	3.84	1.10	0.15	0.74	-0.08	-0.05
QP003711	2,495	3.59	1.14	3.58	1.14	-0.01	0.44	0.77	58	95	0.77	3.81	1.08	0.33	0.68	49	92	3.81	1.04	0.19	0.72	-0.09	-0.05
QP003712	1,727	3.52	1.18	3.51	1.18	-0.01	0.40	0.77	54	95	0.77	3.85	1.13	0.31	0.65	46	89	3.84	1.11	0.27	0.70	-0.12	-0.07
QP003714	724	3.64	1.14	3.67	1.16	0.03	0.42	0.76	55	95	0.77	3.80	1.09	0.31	0.66	48	92	3.78	1.05	0.13	0.70	-0.10	-0.07
QP003716	1,222	3.88	1.10	3.89	1.14	0.01	0.46	0.81	59	98	0.81	3.69	1.10	0.37	0.76	53	97	3.69	1.08	-0.16	0.81	-0.05	0.00
QP003719	2,492	3.77	1.09	3.76	1.09	-0.01	0.41	0.77	56	97	0.77	3.75	1.12	0.34	0.72	50	94	3.75	1.08	-0.02	0.75	-0.05	-0.02
QP003720	1,836	3.68	1.10	3.68	1.09	0.00	0.42	0.77	57	96	0.77	3.83	1.10	0.33	0.70	50	94	3.82	1.07	0.13	0.74	-0.07	-0.03
QP003721	2,486	3.80	1.19	3.76	1.18	-0.03	0.45	0.82	58	97	0.82	3.94	1.18	0.36	0.72	51	93	3.92	1.16	0.10	0.75	-0.10	-0.07
QP003722	2,488	3.92	1.08	3.93	1.09	0.01	0.44	0.78	58	97	0.78	3.86	1.08	0.35	0.73	52	96	3.86	1.05	-0.06	0.77	-0.05	-0.01
SG100628	2,120	3.73	1.10	3.71	1.12	-0.02	0.45	0.78	59	96	0.78	3.88	1.11	0.36	0.71	52	93	3.88	1.09	0.14	0.74	-0.07	-0.04
SG100632	2,496	3.78	1.06	3.77	1.03	-0.02	0.45	0.77	60	97	0.77	3.63	1.08	0.30	0.72	49	95	3.63	1.07	-0.15	0.75	-0.05	-0.02
SG100634	2,488	3.86	1.08	3.83	1.08	-0.03	0.42	0.77	57	97	0.78	3.89	1.12	0.39	0.75	55	96	3.89	1.10	0.03	0.78	-0.02	0.00
SG100636	2,490	3.79	1.10	3.80	1.07	0.01	0.42	0.76	57	97	0.76	3.94	1.10	0.41	0.75	56	95	3.94	1.08	0.14	0.78	-0.01	0.02
SG100638	2,492	3.85	1.07	3.85	1.05	0.00	0.43	0.78	58	98	0.78	3.59	1.11	0.33	0.74	50	96	3.58	1.09	-0.25	0.78	-0.04	0.00
SG100642	1,820	3.79	1.09	3.81	1.10	0.02	0.45	0.78	59	97	0.78	3.84	1.13	0.39	0.75	55	96	3.83	1.10	0.04	0.77	-0.03	-0.01

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded - H1 by H2	H1 by e-rater unrounded - H1 by H2
SG100643	955	3.72	1.15	3.71	1.15	-0.01	0.43	0.79	57	96	0.79	3.96	1.08	0.37	0.69	52	92	3.95	1.06	0.19	0.73	-0.10	-0.06
SG100645	2,496	3.72	1.18	3.74	1.17	0.02	0.48	0.81	60	96	0.81	3.87	1.10	0.37	0.72	52	93	3.87	1.08	0.13	0.75	-0.09	-0.06
SG100646	1,478	3.87	1.07	3.89	1.05	0.02	0.46	0.78	60	97	0.78	3.83	1.06	0.35	0.72	53	95	3.83	1.03	-0.04	0.74	-0.06	-0.04
SG100647	2,491	3.84	1.01	3.83	1.03	-0.01	0.42	0.75	58	97	0.75	3.67	1.10	0.36	0.74	53	96	3.66	1.07	-0.18	0.77	-0.01	0.02
SG100648	2,496	3.74	1.10	3.73	1.13	-0.01	0.45	0.79	59	97	0.79	3.67	1.13	0.37	0.74	53	95	3.67	1.11	-0.06	0.76	-0.05	-0.03
SP001691	2,494	3.59	1.05	3.59	1.06	0.00	0.42	0.76	57	97	0.76	3.67	1.12	0.35	0.71	52	94	3.65	1.09	0.06	0.73	-0.05	-0.03
SP001692	2,493	3.85	1.14	3.80	1.12	-0.04	0.42	0.79	56	97	0.79	3.73	1.08	0.35	0.74	51	95	3.72	1.06	-0.11	0.77	-0.05	-0.02
VA165162	2,402	3.81	1.07	3.81	1.09	0.00	0.43	0.76	58	96	0.76	3.60	1.07	0.30	0.71	48	95	3.61	1.04	-0.19	0.75	-0.05	-0.01
VA165163	2,494	3.82	1.14	3.83	1.13	0.00	0.47	0.79	60	96	0.79	3.78	1.07	0.34	0.72	51	94	3.77	1.05	-0.05	0.75	-0.07	-0.04
VA165170	1,707	3.79	1.10	3.78	1.09	0.00	0.42	0.78	57	96	0.78	3.78	1.09	0.39	0.75	55	95	3.79	1.07	0.00	0.77	-0.03	-0.01
VA165172	1,088	3.79	1.13	3.77	1.13	-0.02	0.46	0.80	59	97	0.80	3.86	1.15	0.41	0.77	56	96	3.85	1.14	0.05	0.79	-0.03	-0.01
VA165174	2,496	3.69	1.07	3.71	1.09	0.01	0.46	0.79	60	98	0.79	3.80	1.10	0.38	0.73	54	95	3.78	1.08	0.08	0.75	-0.06	-0.04
VA165175	884	3.84	1.11	3.85	1.10	0.01	0.46	0.78	59	96	0.78	3.89	1.10	0.36	0.73	52	94	3.89	1.08	0.04	0.75	-0.05	-0.03
VA165180	2,487	4.04	1.07	3.99	1.05	-0.04	0.42	0.78	57	98	0.78	4.02	1.08	0.39	0.75	55	96	4.02	1.04	-0.02	0.77	-0.03	-0.01
VA165182	2,482	3.95	1.10	3.96	1.09	0.01	0.44	0.79	58	97	0.79	3.94	1.10	0.37	0.75	53	96	3.94	1.07	-0.01	0.77	-0.04	-0.02
VB155562	2,485	3.78	1.16	3.77	1.16	-0.01	0.45	0.80	58	96	0.80	3.76	1.11	0.38	0.74	53	94	3.75	1.08	-0.03	0.76	-0.06	-0.04
VB155564	1,158	3.79	1.12	3.85	1.12	0.05	0.44	0.80	57	98	0.80	3.85	1.08	0.37	0.74	53	96	3.85	1.06	0.05	0.77	-0.06	-0.03
VB155565	1,066	3.74	1.12	3.74	1.11	-0.01	0.43	0.80	57	98	0.80	3.82	1.14	0.38	0.75	53	96	3.82	1.12	0.07	0.77	-0.05	-0.03
VB155569	2,314	3.84	1.04	3.82	1.04	-0.02	0.45	0.77	60	97	0.77	3.66	1.12	0.37	0.75	54	96	3.65	1.10	-0.18	0.78	-0.02	0.01

		H1 by H2										H1 by e-rater (rounded to integers)							H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater							e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded - H1 by H2	H1 by e-rater unrounded - H1 by H2
VB155573	1,080	3.89	1.15	3.87	1.14	-0.02	0.43	0.81	56	98	0.81	3.80	1.09	0.35	0.75	51	96	3.80	1.07	-0.08	0.78	-0.06	-0.03
VB155574	2,490	3.85	1.11	3.81	1.08	-0.04	0.40	0.77	55	97	0.77	3.85	1.08	0.35	0.73	51	95	3.84	1.05	-0.01	0.76	-0.04	-0.01
VB155575	2,485	3.77	1.18	3.80	1.18	0.03	0.45	0.80	57	96	0.80	3.95	1.11	0.37	0.71	52	92	3.94	1.09	0.15	0.74	-0.09	-0.06
VB156707	2,152	3.75	1.09	3.76	1.08	0.01	0.40	0.73	55	95	0.73	3.79	1.08	0.34	0.71	51	94	3.79	1.06	0.04	0.73	-0.02	0.00
VB156806	1,066	3.74	1.14	3.74	1.12	0.00	0.42	0.77	56	96	0.77	3.89	1.09	0.35	0.72	52	94	3.88	1.06	0.12	0.75	-0.05	-0.02
VB158584	2,489	3.78	1.12	3.80	1.12	0.02	0.46	0.81	59	97	0.81	3.87	1.14	0.39	0.75	54	95	3.85	1.12	0.07	0.78	-0.06	-0.03
VB158585	2,494	3.80	1.14	3.77	1.11	-0.03	0.45	0.80	58	97	0.80	3.82	1.13	0.34	0.72	50	93	3.82	1.11	0.02	0.74	-0.08	-0.06
VB158614	2,494	3.65	1.14	3.65	1.13	0.00	0.47	0.80	60	97	0.80	3.92	1.12	0.38	0.71	53	93	3.91	1.10	0.23	0.75	-0.09	-0.05
VB158615	904	3.64	1.14	3.69	1.16	0.04	0.41	0.77	55	95	0.77	3.94	1.12	0.33	0.67	49	90	3.91	1.09	0.24	0.72	-0.10	-0.05
VB158617	2,486	3.68	1.13	3.65	1.11	-0.03	0.48	0.79	60	96	0.79	3.80	1.11	0.36	0.72	52	94	3.79	1.09	0.10	0.75	-0.07	-0.04
VB158619	2,499	3.73	1.08	3.72	1.08	-0.01	0.46	0.78	60	97	0.78	3.80	1.10	0.37	0.72	53	94	3.81	1.08	0.07	0.75	-0.06	-0.03
VB158620	2,491	3.92	1.13	3.87	1.12	-0.04	0.48	0.82	61	98	0.82	3.78	1.07	0.35	0.74	52	96	3.77	1.05	-0.13	0.77	-0.08	-0.05
VB161364	379	3.71	1.12	3.73	1.12	0.02	0.37	0.76	53	96	0.76	3.86	1.07	0.38	0.73	54	94	3.84	1.03	0.11	0.76	-0.03	0.00
VB161365	2,376	3.81	1.15	3.83	1.17	0.02	0.43	0.78	57	96	0.78	3.83	1.08	0.35	0.73	51	95	3.83	1.06	0.02	0.76	-0.05	-0.02
VB161421	1,592	3.95	1.14	3.95	1.14	0.01	0.43	0.79	57	96	0.79	3.93	1.11	0.35	0.73	51	95	3.91	1.08	-0.03	0.76	-0.06	-0.03
VB161422	2,494	3.74	1.13	3.71	1.13	-0.03	0.47	0.78	60	96	0.79	3.73	1.11	0.37	0.72	53	94	3.73	1.09	-0.02	0.75	-0.06	-0.04
VB161423	2,489	3.77	1.16	3.76	1.15	-0.01	0.46	0.80	59	96	0.80	3.90	1.10	0.35	0.71	50	93	3.90	1.08	0.11	0.74	-0.09	-0.06
VB161426	1,681	3.67	1.08	3.68	1.07	0.01	0.49	0.80	62	98	0.80	3.74	1.07	0.37	0.71	53	94	3.73	1.05	0.06	0.73	-0.09	-0.07
VB161428	2,416	3.62	1.14	3.61	1.15	-0.01	0.46	0.79	59	96	0.79	3.84	1.09	0.34	0.66	50	91	3.83	1.07	0.18	0.70	-0.13	-0.09

		H1 by H2										H1 by e-rater (rounded to integers)							H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater							e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded - H1 by H2	H1 by e-rater unrounded - H1 by H2
VB161430	2,484	3.64	1.19	3.63	1.19	-0.01	0.48	0.82	60	96	0.82	3.40	1.11	0.26	0.71	43	93	3.38	1.10	-0.22	0.75	-0.11	-0.07
VB161432	1,558	3.74	1.14	3.70	1.12	-0.03	0.41	0.78	56	96	0.78	3.83	1.11	0.36	0.72	52	93	3.82	1.08	0.07	0.75	-0.06	-0.03
VB161433	2,492	3.70	1.19	3.73	1.18	0.02	0.48	0.82	60	97	0.82	3.89	1.09	0.35	0.68	50	92	3.88	1.08	0.16	0.72	-0.14	-0.10
VB161447	1,281	3.94	1.10	3.95	1.10	0.01	0.46	0.80	60	97	0.80	3.88	1.11	0.37	0.74	53	95	3.87	1.09	-0.06	0.77	-0.06	-0.03
VB161451	2,122	3.67	1.21	3.66	1.20	-0.01	0.48	0.83	60	97	0.83	3.79	1.16	0.35	0.72	49	92	3.78	1.15	0.09	0.75	-0.11	-0.08
VB161459	2,486	3.88	1.11	3.89	1.12	0.00	0.45	0.80	59	97	0.80	3.83	1.09	0.39	0.75	55	96	3.82	1.07	-0.06	0.78	-0.05	-0.02
VB184311	2,492	3.72	1.13	3.73	1.15	0.01	0.43	0.78	57	96	0.78	3.98	1.09	0.34	0.67	50	91	3.97	1.06	0.23	0.71	-0.11	-0.07
VB184312	2,491	3.80	1.12	3.84	1.12	0.03	0.46	0.81	59	98	0.81	3.70	1.09	0.37	0.74	53	95	3.70	1.06	-0.09	0.77	-0.07	-0.04
VB184314	2,489	3.75	1.21	3.74	1.20	-0.01	0.47	0.82	59	96	0.82	3.88	1.13	0.38	0.74	53	94	3.87	1.12	0.10	0.77	-0.08	-0.05
VB184315	383	3.91	1.05	3.96	1.07	0.04	0.46	0.76	60	96	0.76	3.92	1.12	0.33	0.73	51	96	3.93	1.10	0.02	0.77	-0.03	0.01
VB184321	2,483	3.83	1.16	3.83	1.16	-0.01	0.46	0.81	59	97	0.81	3.87	1.10	0.38	0.74	53	94	3.86	1.07	0.02	0.77	-0.07	-0.04
VB184323	2,495	3.78	1.08	3.78	1.08	0.01	0.45	0.78	59	97	0.78	3.87	1.08	0.36	0.71	52	95	3.87	1.06	0.09	0.74	-0.07	-0.04
VB184331	2,417	3.53	1.17	3.51	1.15	-0.02	0.44	0.77	57	94	0.77	3.73	1.13	0.32	0.68	48	90	3.72	1.10	0.17	0.71	-0.09	-0.06
VB184333	2,492	3.67	1.11	3.66	1.09	-0.01	0.44	0.78	58	96	0.78	3.66	1.09	0.36	0.73	52	94	3.65	1.06	-0.02	0.75	-0.05	-0.03
VB184343	2,491	3.82	1.06	3.78	1.08	-0.04	0.41	0.77	56	97	0.77	3.66	1.10	0.33	0.72	50	96	3.65	1.08	-0.16	0.76	-0.05	-0.01
VB185821	1,202	3.91	1.07	3.85	1.03	-0.06	0.43	0.76	58	97	0.76	3.88	1.09	0.35	0.74	52	96	3.87	1.06	-0.04	0.77	-0.02	0.01
VB185823	2,133	3.62	1.15	3.59	1.15	-0.02	0.50	0.82	62	97	0.82	3.74	1.10	0.34	0.70	50	93	3.74	1.08	0.10	0.73	-0.12	-0.09
VB188681	2,495	3.81	1.06	3.85	1.05	0.03	0.47	0.79	61	98	0.79	3.66	1.10	0.36	0.74	53	96	3.65	1.07	-0.16	0.78	-0.05	-0.01
VB188682	2,492	3.80	1.13	3.79	1.15	-0.01	0.48	0.81	61	97	0.81	3.58	1.10	0.30	0.72	48	95	3.57	1.08	-0.20	0.76	-0.09	-0.05

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded - H1 by H2	H1 by e-rater unrounded - H1 by H2
VB421805	1,568	3.72	1.16	3.78	1.17	0.05	0.47	0.81	60	97	0.82	3.75	1.15	0.39	0.76	54	95	3.73	1.12	0.01	0.78	-0.05	-0.04
VB439631	2,497	3.78	1.02	3.79	1.03	0.01	0.43	0.77	59	97	0.77	3.81	1.08	0.39	0.73	55	96	3.81	1.06	0.03	0.76	-0.04	-0.01
VB439632	2,498	3.77	1.10	3.74	1.07	-0.03	0.44	0.77	58	97	0.77	3.60	1.12	0.31	0.72	48	95	3.59	1.09	-0.17	0.76	-0.05	-0.01
VB439633	2,492	3.79	1.11	3.80	1.09	0.01	0.43	0.78	57	97	0.78	3.54	1.09	0.32	0.73	49	95	3.53	1.08	-0.23	0.78	-0.05	0.00
VB439637	2,491	3.75	1.09	3.77	1.10	0.01	0.42	0.78	57	97	0.78	3.34	1.09	0.22	0.69	42	94	3.34	1.08	-0.37	0.77	-0.09	-0.01
VB439638	2,492	3.89	1.06	3.89	1.07	0.00	0.43	0.78	58	98	0.78	3.67	1.06	0.35	0.74	52	96	3.65	1.03	-0.22	0.79	-0.04	0.01
VB445396	2,493	3.65	1.15	3.68	1.16	0.02	0.48	0.80	60	97	0.81	3.66	1.10	0.33	0.71	49	94	3.66	1.08	0.01	0.74	-0.09	-0.07
VB445397	1,512	3.79	1.18	3.78	1.18	0.00	0.49	0.82	61	97	0.82	3.79	1.08	0.35	0.72	51	94	3.78	1.05	-0.01	0.75	-0.10	-0.07
VB445398	1,826	3.76	1.12	3.74	1.14	-0.02	0.45	0.79	59	96	0.79	3.57	1.10	0.29	0.72	47	95	3.56	1.08	-0.17	0.75	-0.07	-0.04
VB445399	2,320	3.81	1.11	3.78	1.11	-0.02	0.43	0.78	57	97	0.78	3.61	1.08	0.31	0.72	48	95	3.61	1.06	-0.18	0.75	-0.06	-0.03
VB445401	1,244	3.79	1.07	3.77	1.09	-0.01	0.39	0.77	54	97	0.77	3.79	1.09	0.34	0.74	51	96	3.79	1.07	0.00	0.77	-0.03	0.00
VB446102	2,492	3.65	1.07	3.64	1.07	-0.01	0.47	0.79	61	97	0.79	3.63	1.14	0.39	0.75	55	95	3.62	1.13	-0.03	0.78	-0.04	-0.01
VB446103	2,494	3.74	1.10	3.73	1.10	-0.01	0.42	0.76	57	95	0.76	3.57	1.12	0.32	0.73	49	95	3.56	1.10	-0.17	0.76	-0.03	0.00
VB446104	882	3.68	1.05	3.65	1.06	-0.02	0.36	0.72	53	96	0.72	3.75	1.09	0.37	0.73	53	95	3.74	1.07	0.06	0.76	0.01	0.04
VB446105	2,495	3.72	1.07	3.69	1.08	-0.03	0.40	0.75	55	96	0.75	3.91	1.10	0.37	0.71	53	94	3.90	1.09	0.17	0.75	-0.04	0.00
VB446108	2,493	3.86	1.12	3.86	1.08	0.00	0.43	0.79	58	97	0.79	3.84	1.15	0.37	0.76	52	96	3.83	1.13	-0.02	0.78	-0.03	-0.01
VB446110	2,492	3.85	1.07	3.87	1.08	0.02	0.45	0.79	59	98	0.79	3.77	1.11	0.39	0.76	55	96	3.77	1.09	-0.08	0.79	-0.03	0.00
VB446112	2,488	3.85	1.09	3.86	1.10	0.01	0.49	0.81	62	98	0.81	3.85	1.12	0.39	0.76	54	96	3.85	1.10	0.00	0.78	-0.05	-0.03
VB446113	1,220	3.54	1.14	3.55	1.17	0.01	0.46	0.78	59	95	0.79	3.56	1.14	0.32	0.72	48	94	3.55	1.12	0.01	0.75	-0.06	-0.04

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded - H1 by H2	H1 by e-rater unrounded - H1 by H2
VB446114	2,497	3.71	1.04	3.68	1.05	-0.03	0.43	0.77	58	97	0.77	3.51	1.09	0.30	0.72	49	96	3.49	1.08	-0.21	0.76	-0.05	-0.01
VB446116	2,305	3.61	1.04	3.61	1.07	-0.01	0.40	0.75	56	96	0.75	3.61	1.10	0.37	0.72	53	95	3.61	1.08	-0.01	0.74	-0.03	-0.01
VB446118	2,493	3.79	1.08	3.80	1.08	0.00	0.41	0.75	56	96	0.75	3.77	1.07	0.35	0.73	52	95	3.77	1.04	-0.02	0.75	-0.02	0.00
VB446202	2,431	3.85	1.13	3.84	1.11	-0.01	0.46	0.81	59	97	0.81	3.93	1.13	0.40	0.76	55	95	3.92	1.10	0.06	0.79	-0.05	-0.02
VB446204	2,491	3.66	1.08	3.64	1.06	-0.02	0.40	0.76	55	97	0.76	3.67	1.08	0.33	0.70	50	94	3.66	1.08	0.00	0.73	-0.06	-0.03
VB446205	1,474	3.62	1.16	3.60	1.17	-0.02	0.48	0.81	60	97	0.81	3.69	1.13	0.34	0.70	50	92	3.68	1.11	0.05	0.73	-0.11	-0.08
VB446215	2,491	3.96	1.04	3.97	1.04	0.02	0.44	0.77	59	97	0.77	3.70	1.06	0.33	0.72	51	96	3.69	1.04	-0.25	0.77	-0.05	0.00
VB446945	1,162	3.69	1.13	3.67	1.12	-0.01	0.46	0.79	59	96	0.79	3.81	1.13	0.37	0.71	52	93	3.80	1.09	0.11	0.72	-0.08	-0.07
VB457580	1,901	3.82	1.07	3.78	1.09	-0.03	0.45	0.77	59	96	0.77	3.79	1.11	0.38	0.75	54	96	3.78	1.09	-0.04	0.77	-0.02	0.00
VB457763	947	3.69	1.06	3.68	1.04	0.00	0.41	0.74	57	96	0.74	3.60	1.12	0.38	0.75	54	96	3.60	1.11	-0.09	0.79	0.01	0.05
VB457764	1,071	3.85	1.12	3.86	1.13	0.01	0.43	0.79	57	97	0.79	3.90	1.10	0.42	0.76	56	96	3.89	1.08	0.04	0.79	-0.03	0.00
VB457772	2,495	3.84	1.08	3.85	1.09	0.01	0.45	0.78	59	97	0.78	3.78	1.12	0.37	0.75	53	96	3.78	1.10	-0.05	0.78	-0.03	0.00
VB457773	2,098	3.82	1.08	3.82	1.10	0.00	0.47	0.80	61	97	0.80	3.66	1.09	0.35	0.74	52	95	3.65	1.07	-0.15	0.78	-0.06	-0.02
VB457774	1,787	3.95	1.10	3.93	1.08	-0.01	0.47	0.79	60	97	0.79	3.73	1.05	0.30	0.71	48	95	3.71	1.02	-0.21	0.75	-0.08	-0.04
VB457775	1,299	3.84	1.14	3.86	1.12	0.02	0.46	0.81	59	97	0.81	3.88	1.09	0.36	0.72	52	94	3.87	1.07	0.02	0.74	-0.09	-0.07
VB457776	1,660	3.84	1.11	3.82	1.10	-0.02	0.47	0.80	60	97	0.80	3.89	1.12	0.36	0.73	52	94	3.89	1.09	0.04	0.76	-0.07	-0.04
VB459256	742	3.64	1.01	3.65	1.05	0.02	0.38	0.73	55	96	0.73	3.65	1.11	0.38	0.72	54	95	3.64	1.08	0.01	0.76	-0.01	0.03
VB459258	2,494	3.58	1.12	3.58	1.11	0.00	0.43	0.78	57	96	0.78	3.65	1.10	0.36	0.72	52	94	3.64	1.08	0.06	0.75	-0.06	-0.03
VB459914	2,494	3.68	1.10	3.70	1.10	0.02	0.44	0.79	58	97	0.79	3.70	1.09	0.36	0.71	52	94	3.69	1.07	0.01	0.73	-0.08	-0.06

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded - H1 by H2	H1 by e-rater unrounded - H1 by H2
VB461783	2,495	3.76	1.08	3.74	1.07	-0.02	0.42	0.77	57	97	0.77	3.84	1.09	0.39	0.74	55	95	3.83	1.07	0.07	0.76	-0.03	-0.01
VB461793	2,493	3.67	1.07	3.67	1.07	0.00	0.43	0.76	57	96	0.76	3.75	1.10	0.33	0.69	50	93	3.76	1.07	0.08	0.72	-0.07	-0.04
VB461797	2,491	3.74	1.11	3.74	1.08	0.00	0.46	0.79	60	97	0.79	3.52	1.11	0.30	0.73	48	95	3.51	1.08	-0.20	0.76	-0.06	-0.03
VB461799	2,265	3.91	1.11	3.90	1.10	-0.01	0.44	0.77	57	96	0.77	3.85	1.08	0.37	0.75	53	96	3.84	1.04	-0.06	0.77	-0.02	0.00
VB462970	1,283	3.52	1.15	3.57	1.18	0.04	0.47	0.82	59	97	0.82	3.75	1.13	0.33	0.70	49	92	3.74	1.10	0.19	0.74	-0.12	-0.08
VB462972	2,490	3.63	1.11	3.65	1.11	0.02	0.48	0.81	61	97	0.81	3.77	1.11	0.35	0.71	51	94	3.76	1.08	0.12	0.74	-0.10	-0.07
VP000344	2,494	3.62	1.22	3.61	1.21	-0.01	0.49	0.83	61	97	0.83	3.79	1.13	0.34	0.70	49	92	3.78	1.11	0.13	0.74	-0.13	-0.09
VP000351	2,493	3.59	1.11	3.62	1.12	0.02	0.44	0.79	58	97	0.79	3.63	1.14	0.36	0.74	52	94	3.63	1.12	0.03	0.76	-0.05	-0.03
VP000357	1,789	3.70	1.06	3.72	1.05	0.02	0.40	0.75	56	97	0.75	3.65	1.10	0.37	0.75	53	96	3.64	1.08	-0.06	0.77	0.00	0.02
VP000360	2,493	3.78	1.11	3.78	1.10	0.00	0.47	0.80	60	97	0.80	3.83	1.10	0.36	0.73	52	95	3.82	1.09	0.04	0.76	-0.07	-0.04

Note. Shaded cells indicate values that failed to meet the threshold. adj = adjacent, H1 = Human 1, H2 = Human 2, std difference = standardized diff, wtd = weighted.

Table F5

Agreement With Human Scores on Argument Prompts: Generic Prompt-Specific Intercept (GPSI) Model

		H1 by H2										H1 by e-rater (rounded to integers)							H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater							e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
Average	2,070	3.76	1.11	3.76	1.11	0.00	0.44	0.78	58	97	0.78	3.76	1.10	0.36	0.73	52	95	3.76	1.08	0.00	0.76	-0.05	-0.03
GM010069	1,226	3.57	1.16	3.56	1.13	0.00	0.45	0.79	58	97	0.79	3.58	1.15	0.31	0.68	47	91	3.58	1.14	0.02	0.71	-0.11	-0.08
GM010070	2,497	3.76	1.03	3.76	1.03	0.00	0.44	0.76	59	97	0.76	3.79	1.09	0.38	0.74	54	96	3.78	1.06	0.02	0.78	-0.02	0.02
GM010071	646	3.82	1.07	3.82	1.04	0.00	0.41	0.77	56	97	0.77	3.71	1.09	0.39	0.76	55	97	3.73	1.06	-0.09	0.78	-0.01	0.01
GM010072	2,489	3.60	1.10	3.62	1.11	0.01	0.44	0.76	58	96	0.76	3.65	1.07	0.31	0.68	48	94	3.64	1.05	0.03	0.71	-0.08	-0.05
GM010074	1,486	3.83	1.08	3.85	1.05	0.02	0.44	0.78	59	97	0.78	3.82	1.12	0.39	0.76	55	96	3.83	1.09	0.00	0.79	-0.02	0.01
GM010082	2,495	3.70	1.11	3.71	1.10	0.01	0.45	0.79	59	97	0.79	3.75	1.13	0.37	0.74	53	95	3.74	1.11	0.04	0.77	-0.05	-0.02
GM010084	2,229	3.71	1.12	3.70	1.14	-0.01	0.44	0.77	57	96	0.77	3.68	1.12	0.32	0.72	49	94	3.68	1.11	-0.03	0.75	-0.05	-0.02
GM010085	2,493	3.80	1.07	3.76	1.06	-0.04	0.45	0.78	59	97	0.78	3.75	1.15	0.38	0.75	54	96	3.74	1.12	-0.06	0.78	-0.03	0.00
IJ100114	1,486	3.68	1.09	3.67	1.07	-0.01	0.45	0.78	59	97	0.78	3.69	1.11	0.34	0.72	51	95	3.69	1.08	0.01	0.75	-0.06	-0.03
IJ100117	2,495	3.87	1.06	3.86	1.04	-0.01	0.43	0.75	58	96	0.75	3.89	1.08	0.37	0.72	53	95	3.88	1.05	0.01	0.75	-0.03	0.00
IJ100118	2,494	3.87	1.03	3.85	1.06	-0.02	0.43	0.77	59	97	0.77	3.86	1.13	0.39	0.76	55	97	3.84	1.11	-0.02	0.79	-0.01	0.02
IJ100119	2,495	3.74	1.05	3.75	1.07	0.00	0.43	0.77	58	97	0.77	3.75	1.10	0.39	0.74	55	95	3.74	1.08	0.00	0.76	-0.03	-0.01
IJ100121	1,308	3.70	1.11	3.69	1.15	0.00	0.44	0.79	58	96	0.79	3.68	1.11	0.35	0.72	51	94	3.68	1.08	-0.02	0.73	-0.07	-0.06
IJ100122	2,492	3.78	1.11	3.77	1.10	-0.01	0.46	0.78	60	97	0.78	3.77	1.12	0.39	0.74	54	95	3.77	1.11	-0.01	0.76	-0.04	-0.02
NK000775	2,496	3.75	1.05	3.71	1.06	-0.03	0.44	0.76	59	96	0.76	3.72	1.07	0.33	0.71	51	95	3.72	1.04	-0.03	0.74	-0.05	-0.02
NK000776	2,493	3.71	1.06	3.69	1.06	-0.03	0.38	0.72	55	95	0.72	3.66	1.07	0.31	0.71	49	95	3.65	1.05	-0.06	0.73	-0.01	0.01

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
NK000777	2,499	3.86	1.06	3.84	1.08	-0.02	0.45	0.79	59	98	0.79	3.86	1.15	0.37	0.75	53	96	3.86	1.12	0.00	0.78	-0.04	-0.01
NK000778	882	3.89	1.14	3.88	1.11	-0.01	0.41	0.77	55	95	0.77	3.90	1.11	0.36	0.74	52	94	3.90	1.08	0.01	0.76	-0.03	-0.01
NK000780	2,496	3.69	1.09	3.70	1.10	0.01	0.42	0.77	56	96	0.77	3.67	1.12	0.36	0.74	52	95	3.67	1.09	-0.02	0.76	-0.03	-0.01
NK000784	2,036	3.67	1.13	3.66	1.14	0.00	0.45	0.79	58	96	0.79	3.61	1.12	0.32	0.72	49	94	3.60	1.10	-0.06	0.74	-0.07	-0.05
QP003711	2,495	3.59	1.14	3.58	1.14	-0.01	0.44	0.77	58	95	0.77	3.64	1.06	0.32	0.69	49	93	3.63	1.04	0.04	0.72	-0.08	-0.05
QP003712	1,727	3.52	1.18	3.51	1.18	-0.01	0.40	0.77	54	95	0.77	3.44	1.11	0.26	0.67	44	92	3.44	1.09	-0.07	0.70	-0.10	-0.07
QP003714	724	3.64	1.14	3.67	1.16	0.03	0.42	0.76	55	95	0.77	3.64	1.06	0.29	0.66	46	93	3.64	1.05	0.01	0.70	-0.10	-0.07
QP003716	1,222	3.88	1.10	3.89	1.14	0.01	0.46	0.81	59	98	0.81	3.84	1.09	0.42	0.77	57	96	3.85	1.09	-0.02	0.81	-0.04	0.00
QP003719	2,492	3.77	1.09	3.76	1.09	-0.01	0.41	0.77	56	97	0.77	3.74	1.12	0.33	0.72	50	94	3.74	1.08	-0.03	0.75	-0.05	-0.02
QP003720	1,836	3.68	1.10	3.68	1.09	0.00	0.42	0.77	57	96	0.77	3.69	1.09	0.33	0.71	50	95	3.69	1.06	0.01	0.74	-0.06	-0.03
QP003721	2,486	3.80	1.19	3.76	1.18	-0.03	0.45	0.82	58	97	0.82	3.76	1.16	0.33	0.73	49	94	3.74	1.15	-0.05	0.75	-0.09	-0.07
QP003722	2,488	3.92	1.08	3.93	1.09	0.01	0.44	0.78	58	97	0.78	3.94	1.08	0.36	0.74	53	96	3.93	1.05	0.01	0.77	-0.04	-0.01
SG100628	2,120	3.73	1.10	3.71	1.12	-0.02	0.45	0.78	59	96	0.78	3.74	1.11	0.34	0.70	51	93	3.75	1.09	0.02	0.74	-0.08	-0.04
SG100632	2,496	3.78	1.06	3.77	1.03	-0.02	0.45	0.77	60	97	0.77	3.80	1.10	0.35	0.72	52	95	3.80	1.07	0.02	0.75	-0.05	-0.02
SG100634	2,488	3.86	1.08	3.83	1.08	-0.03	0.42	0.77	57	97	0.78	3.89	1.12	0.39	0.75	54	96	3.89	1.10	0.02	0.78	-0.02	0.00
SG100636	2,490	3.79	1.10	3.80	1.07	0.01	0.42	0.76	57	97	0.76	3.82	1.10	0.40	0.76	55	96	3.81	1.08	0.03	0.78	0.00	0.02
SG100638	2,492	3.85	1.07	3.85	1.05	0.00	0.43	0.78	58	98	0.78	3.85	1.13	0.40	0.76	55	96	3.85	1.10	0.00	0.78	-0.02	0.00
SG100642	1,820	3.79	1.09	3.81	1.10	0.02	0.45	0.78	59	97	0.78	3.80	1.13	0.38	0.75	54	96	3.79	1.10	0.00	0.77	-0.03	-0.01
SG100643	955	3.72	1.15	3.71	1.15	-0.01	0.43	0.79	57	96	0.79	3.69	1.10	0.35	0.70	51	93	3.69	1.06	-0.03	0.73	-0.09	-0.06
SG100645	2,496	3.72	1.18	3.74	1.17	0.02	0.48	0.81	60	96	0.81	3.79	1.10	0.36	0.72	52	94	3.79	1.08	0.06	0.75	-0.09	-0.06

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
SG100646	1,478	3.87	1.07	3.89	1.05	0.02	0.46	0.78	60	97	0.78	3.86	1.05	0.36	0.72	53	95	3.86	1.03	0.00	0.74	-0.06	-0.04
SG100647	2,491	3.84	1.01	3.83	1.03	-0.01	0.42	0.75	58	97	0.75	3.79	1.10	0.39	0.75	55	96	3.79	1.08	-0.05	0.77	0.00	0.02
SG100648	2,496	3.74	1.10	3.73	1.13	-0.01	0.45	0.79	59	97	0.79	3.65	1.13	0.37	0.74	53	95	3.65	1.11	-0.08	0.76	-0.05	-0.03
SP001691	2,494	3.59	1.05	3.59	1.06	0.00	0.42	0.76	57	97	0.76	3.56	1.12	0.34	0.71	51	94	3.55	1.09	-0.04	0.73	-0.05	-0.03
SP001692	2,493	3.85	1.14	3.80	1.12	-0.04	0.42	0.79	56	97	0.79	3.86	1.09	0.39	0.75	54	95	3.85	1.06	0.00	0.77	-0.04	-0.02
VA165162	2,402	3.81	1.07	3.81	1.09	0.00	0.43	0.76	58	96	0.76	3.84	1.06	0.36	0.72	53	95	3.84	1.04	0.02	0.75	-0.04	-0.01
VA165163	2,494	3.82	1.14	3.83	1.13	0.00	0.47	0.79	60	96	0.79	3.80	1.07	0.35	0.72	51	94	3.78	1.05	-0.04	0.75	-0.07	-0.04
VA165170	1,707	3.79	1.10	3.78	1.09	0.00	0.42	0.78	57	96	0.78	3.80	1.09	0.39	0.75	54	95	3.80	1.07	0.02	0.77	-0.03	-0.01
VA165172	1,088	3.79	1.13	3.77	1.13	-0.02	0.46	0.80	59	97	0.80	3.80	1.14	0.40	0.77	55	96	3.78	1.13	-0.01	0.79	-0.03	-0.01
VA165174	2,496	3.69	1.07	3.71	1.09	0.01	0.46	0.79	60	98	0.79	3.64	1.10	0.35	0.72	52	95	3.63	1.08	-0.05	0.76	-0.07	-0.03
VA165175	884	3.84	1.11	3.85	1.10	0.01	0.46	0.78	59	96	0.78	3.87	1.10	0.37	0.73	53	95	3.86	1.08	0.02	0.75	-0.05	-0.03
VA165180	2,487	4.04	1.07	3.99	1.05	-0.04	0.42	0.78	57	98	0.78	4.02	1.08	0.39	0.75	55	96	4.02	1.04	-0.02	0.77	-0.03	-0.01
VA165182	2,482	3.95	1.10	3.96	1.09	0.01	0.44	0.79	58	97	0.79	3.93	1.10	0.37	0.75	53	96	3.93	1.07	-0.02	0.77	-0.04	-0.02
VB155562	2,485	3.78	1.16	3.77	1.16	-0.01	0.45	0.80	58	96	0.80	3.78	1.11	0.38	0.74	53	94	3.77	1.08	-0.01	0.76	-0.06	-0.04
VB155564	1,158	3.79	1.12	3.85	1.12	0.05	0.44	0.80	57	98	0.80	3.83	1.08	0.38	0.74	54	96	3.82	1.06	0.03	0.77	-0.06	-0.03
VB155565	1,066	3.74	1.12	3.74	1.11	-0.01	0.43	0.80	57	98	0.80	3.72	1.13	0.37	0.75	52	96	3.72	1.12	-0.02	0.77	-0.05	-0.03
VB155569	2,314	3.84	1.04	3.82	1.04	-0.02	0.45	0.77	60	97	0.77	3.87	1.12	0.41	0.76	57	96	3.86	1.10	0.02	0.78	-0.01	0.01
VB155573	1,080	3.89	1.15	3.87	1.14	-0.02	0.43	0.81	56	98	0.81	3.80	1.09	0.35	0.75	51	96	3.79	1.07	-0.09	0.78	-0.06	-0.03
VB155574	2,490	3.85	1.11	3.81	1.08	-0.04	0.40	0.77	55	97	0.77	3.88	1.08	0.36	0.73	52	95	3.88	1.05	0.02	0.76	-0.04	-0.01
VB155575	2,485	3.77	1.18	3.80	1.18	0.03	0.45	0.80	57	96	0.80	3.82	1.13	0.35	0.72	50	93	3.82	1.08	0.04	0.74	-0.08	-0.06

		H1 by H2										H1 by e-rater (rounded to integers)							H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater							e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
VB156707	2,152	3.75	1.09	3.76	1.08	0.01	0.40	0.73	55	95	0.73	3.69	1.08	0.31	0.71	49	95	3.69	1.06	-0.05	0.73	-0.02	0.00
VB156806	1,066	3.74	1.14	3.74	1.12	0.00	0.42	0.77	56	96	0.77	3.70	1.09	0.32	0.72	49	94	3.70	1.06	-0.04	0.75	-0.05	-0.02
VB158584	2,489	3.78	1.12	3.80	1.12	0.02	0.46	0.81	59	97	0.81	3.83	1.14	0.38	0.75	53	95	3.82	1.12	0.03	0.78	-0.06	-0.03
VB158585	2,494	3.80	1.14	3.77	1.11	-0.03	0.45	0.80	58	97	0.80	3.76	1.13	0.33	0.71	49	93	3.76	1.11	-0.03	0.74	-0.09	-0.06
VB158614	2,494	3.65	1.14	3.65	1.13	0.00	0.47	0.80	60	97	0.80	3.72	1.11	0.38	0.72	53	94	3.71	1.09	0.05	0.75	-0.08	-0.05
VB158615	904	3.64	1.14	3.69	1.16	0.04	0.41	0.77	55	95	0.77	3.72	1.11	0.29	0.68	46	93	3.71	1.09	0.06	0.72	-0.09	-0.05
VB158617	2,486	3.68	1.13	3.65	1.11	-0.03	0.48	0.79	60	96	0.79	3.65	1.10	0.33	0.72	50	94	3.64	1.08	-0.04	0.75	-0.07	-0.04
VB158619	2,499	3.73	1.08	3.72	1.08	-0.01	0.46	0.78	60	97	0.78	3.73	1.11	0.36	0.73	52	95	3.72	1.08	-0.01	0.75	-0.05	-0.03
VB158620	2,491	3.92	1.13	3.87	1.12	-0.04	0.48	0.82	61	98	0.82	3.93	1.08	0.38	0.74	54	95	3.92	1.05	0.01	0.77	-0.08	-0.05
VB161364	379	3.71	1.12	3.73	1.12	0.02	0.37	0.76	53	96	0.76	3.80	1.06	0.40	0.73	55	94	3.78	1.03	0.06	0.76	-0.03	0.00
VB161365	2,376	3.81	1.15	3.83	1.17	0.02	0.43	0.78	57	96	0.78	3.78	1.08	0.33	0.72	50	94	3.78	1.06	-0.02	0.76	-0.06	-0.02
VB161421	1,592	3.95	1.14	3.95	1.14	0.01	0.43	0.79	57	96	0.79	3.93	1.11	0.35	0.73	51	95	3.91	1.08	-0.03	0.76	-0.06	-0.03
VB161422	2,494	3.74	1.13	3.71	1.13	-0.03	0.47	0.78	60	96	0.79	3.78	1.10	0.37	0.72	53	94	3.77	1.09	0.03	0.75	-0.06	-0.04
VB161423	2,489	3.77	1.16	3.76	1.15	-0.01	0.46	0.80	59	96	0.80	3.83	1.10	0.34	0.71	50	94	3.82	1.08	0.04	0.74	-0.09	-0.06
VB161426	1,681	3.67	1.08	3.68	1.07	0.01	0.49	0.80	62	98	0.80	3.78	1.07	0.38	0.71	54	94	3.77	1.05	0.09	0.73	-0.09	-0.07
VB161428	2,416	3.62	1.14	3.61	1.15	-0.01	0.46	0.79	59	96	0.79	3.60	1.09	0.33	0.68	49	93	3.60	1.07	-0.01	0.70	-0.11	-0.09
VB161430	2,484	3.64	1.19	3.63	1.19	-0.01	0.48	0.82	60	96	0.82	3.61	1.12	0.34	0.73	49	94	3.61	1.11	-0.03	0.75	-0.09	-0.07
VB161432	1,558	3.74	1.14	3.70	1.12	-0.03	0.41	0.78	56	96	0.78	3.68	1.09	0.37	0.73	53	94	3.67	1.07	-0.06	0.75	-0.05	-0.03
VB161433	2,492	3.70	1.19	3.73	1.18	0.02	0.48	0.82	60	97	0.82	3.74	1.09	0.33	0.69	49	93	3.73	1.07	0.02	0.72	-0.13	-0.10
VB161447	1,281	3.94	1.10	3.95	1.10	0.01	0.46	0.80	60	97	0.80	3.97	1.12	0.40	0.75	55	95	3.96	1.10	0.02	0.77	-0.05	-0.03

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
VB161451	2,122	3.67	1.21	3.66	1.20	-0.01	0.48	0.83	60	97	0.83	3.67	1.15	0.33	0.73	48	93	3.66	1.14	-0.01	0.75	-0.10	-0.08
VB161459	2,486	3.88	1.11	3.89	1.12	0.00	0.45	0.80	59	97	0.80	3.92	1.10	0.41	0.76	56	96	3.92	1.07	0.03	0.78	-0.04	-0.02
VB184311	2,492	3.72	1.13	3.73	1.15	0.01	0.43	0.78	57	96	0.78	3.66	1.07	0.30	0.68	48	93	3.67	1.05	-0.04	0.71	-0.10	-0.07
VB184312	2,491	3.80	1.12	3.84	1.12	0.03	0.46	0.81	59	98	0.81	3.83	1.09	0.40	0.74	55	95	3.82	1.07	0.01	0.77	-0.07	-0.04
VB184314	2,489	3.75	1.21	3.74	1.20	-0.01	0.47	0.82	59	96	0.82	3.74	1.13	0.38	0.75	52	94	3.74	1.11	-0.01	0.77	-0.07	-0.05
VB184315	383	3.91	1.05	3.96	1.07	0.04	0.46	0.76	60	96	0.76	3.90	1.12	0.35	0.74	52	96	3.91	1.10	0.00	0.77	-0.02	0.01
VB184321	2,483	3.83	1.16	3.83	1.16	-0.01	0.46	0.81	59	97	0.81	3.84	1.10	0.38	0.74	53	95	3.84	1.07	0.00	0.77	-0.07	-0.04
VB184323	2,495	3.78	1.08	3.78	1.08	0.01	0.45	0.78	59	97	0.78	3.81	1.09	0.36	0.72	52	95	3.80	1.06	0.03	0.74	-0.06	-0.04
VB184331	2,417	3.53	1.17	3.51	1.15	-0.02	0.44	0.77	57	94	0.77	3.50	1.11	0.29	0.69	46	92	3.49	1.10	-0.03	0.71	-0.08	-0.06
VB184333	2,492	3.67	1.11	3.66	1.09	-0.01	0.44	0.78	58	96	0.78	3.61	1.09	0.35	0.72	51	95	3.60	1.06	-0.07	0.75	-0.06	-0.03
VB184343	2,491	3.82	1.06	3.78	1.08	-0.04	0.41	0.77	56	97	0.77	3.83	1.10	0.37	0.74	53	96	3.84	1.08	0.01	0.76	-0.03	-0.01
VB185821	1,202	3.91	1.07	3.85	1.03	-0.06	0.43	0.76	58	97	0.76	3.87	1.09	0.34	0.74	51	96	3.86	1.06	-0.05	0.77	-0.02	0.01
VB185823	2,133	3.62	1.15	3.59	1.15	-0.02	0.50	0.82	62	97	0.82	3.64	1.10	0.32	0.70	49	93	3.64	1.08	0.01	0.73	-0.12	-0.09
VB188681	2,495	3.81	1.06	3.85	1.05	0.03	0.47	0.79	61	98	0.79	3.82	1.10	0.39	0.75	55	96	3.82	1.07	0.00	0.78	-0.04	-0.01
VB188682	2,492	3.80	1.13	3.79	1.15	-0.01	0.48	0.81	61	97	0.81	3.83	1.11	0.38	0.74	54	95	3.83	1.09	0.03	0.76	-0.07	-0.05
VB421805	1,568	3.72	1.16	3.78	1.17	0.05	0.47	0.81	60	97	0.82	3.73	1.15	0.39	0.76	53	95	3.70	1.12	-0.01	0.79	-0.05	-0.03
VB439631	2,497	3.78	1.02	3.79	1.03	0.01	0.43	0.77	59	97	0.77	3.81	1.08	0.39	0.73	55	96	3.81	1.06	0.03	0.76	-0.04	-0.01
VB439632	2,498	3.77	1.10	3.74	1.07	-0.03	0.44	0.77	58	97	0.77	3.69	1.13	0.33	0.73	50	95	3.68	1.10	-0.08	0.76	-0.04	-0.01
VB439633	2,492	3.79	1.11	3.80	1.09	0.01	0.43	0.78	57	97	0.78	3.80	1.10	0.38	0.75	54	95	3.79	1.09	0.00	0.78	-0.03	0.00
VB439637	2,491	3.75	1.09	3.77	1.10	0.01	0.42	0.78	57	97	0.78	3.81	1.12	0.39	0.74	54	95	3.80	1.10	0.05	0.76	-0.04	-0.02

		H1 by H2										H1 by e-rater (rounded to integers)							H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater							e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
VB439638	2,492	3.89	1.06	3.89	1.07	0.00	0.43	0.78	58	98	0.78	3.87	1.07	0.41	0.76	57	97	3.86	1.04	-0.02	0.79	-0.02	0.01
VB445396	2,493	3.65	1.15	3.68	1.16	0.02	0.48	0.80	60	97	0.81	3.68	1.10	0.34	0.71	50	94	3.68	1.08	0.02	0.74	-0.09	-0.07
VB445397	1,512	3.79	1.18	3.78	1.18	0.00	0.49	0.82	61	97	0.82	3.80	1.08	0.35	0.72	51	94	3.79	1.05	0.00	0.75	-0.10	-0.07
VB445398	1,826	3.76	1.12	3.74	1.14	-0.02	0.45	0.79	59	96	0.79	3.75	1.11	0.34	0.73	51	94	3.75	1.09	0.00	0.75	-0.06	-0.04
VB445399	2,320	3.81	1.11	3.78	1.11	-0.02	0.43	0.78	57	97	0.78	3.81	1.09	0.37	0.73	53	95	3.81	1.07	0.00	0.75	-0.05	-0.03
VB445401	1,244	3.79	1.07	3.77	1.09	-0.01	0.39	0.77	54	97	0.77	3.85	1.09	0.36	0.74	52	96	3.85	1.07	0.06	0.77	-0.03	0.00
VB446102	2,492	3.65	1.07	3.64	1.07	-0.01	0.47	0.79	61	97	0.79	3.66	1.14	0.41	0.75	56	95	3.65	1.13	0.00	0.78	-0.04	-0.01
VB446103	2,494	3.74	1.10	3.73	1.10	-0.01	0.42	0.76	57	95	0.76	3.72	1.12	0.36	0.73	52	95	3.71	1.10	-0.03	0.76	-0.03	0.00
VB446104	882	3.68	1.05	3.65	1.06	-0.02	0.36	0.72	53	96	0.72	3.69	1.09	0.36	0.73	53	95	3.67	1.07	0.00	0.76	0.01	0.04
VB446105	2,495	3.72	1.07	3.69	1.08	-0.03	0.40	0.75	55	96	0.75	3.72	1.10	0.36	0.72	52	95	3.71	1.08	0.00	0.75	-0.03	0.00
VB446108	2,493	3.86	1.12	3.86	1.08	0.00	0.43	0.79	58	97	0.79	3.86	1.15	0.37	0.76	53	96	3.86	1.13	0.00	0.78	-0.03	-0.01
VB446110	2,492	3.85	1.07	3.87	1.08	0.02	0.45	0.79	59	98	0.79	3.88	1.13	0.40	0.76	55	96	3.88	1.10	0.03	0.79	-0.03	0.00
VB446112	2,488	3.85	1.09	3.86	1.10	0.01	0.49	0.81	62	98	0.81	3.82	1.12	0.39	0.76	55	96	3.82	1.10	-0.03	0.78	-0.05	-0.03
VB446113	1,220	3.54	1.14	3.55	1.17	0.01	0.46	0.78	59	95	0.79	3.62	1.14	0.32	0.72	49	94	3.61	1.12	0.07	0.75	-0.06	-0.04
VB446114	2,497	3.71	1.04	3.68	1.05	-0.03	0.43	0.77	58	97	0.77	3.75	1.10	0.35	0.73	52	96	3.74	1.09	0.03	0.76	-0.04	-0.01
VB446116	2,305	3.61	1.04	3.61	1.07	-0.01	0.40	0.75	56	96	0.75	3.60	1.10	0.36	0.72	53	95	3.60	1.08	-0.02	0.74	-0.03	-0.01
VB446118	2,493	3.79	1.08	3.80	1.08	0.00	0.41	0.75	56	96	0.75	3.84	1.07	0.35	0.72	52	95	3.84	1.04	0.04	0.75	-0.03	0.00
VB446202	2,431	3.85	1.13	3.84	1.11	-0.01	0.46	0.81	59	97	0.81	3.86	1.12	0.40	0.76	55	96	3.84	1.10	-0.01	0.79	-0.05	-0.02
VB446204	2,491	3.66	1.08	3.64	1.06	-0.02	0.40	0.76	55	97	0.76	3.71	1.09	0.33	0.70	50	94	3.71	1.08	0.04	0.73	-0.06	-0.03
VB446205	1,474	3.62	1.16	3.60	1.17	-0.02	0.48	0.81	60	97	0.81	3.64	1.14	0.33	0.71	49	93	3.63	1.11	0.01	0.73	-0.10	-0.08

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
VB446215	2,491	3.96	1.04	3.97	1.04	0.02	0.44	0.77	59	97	0.77	4.02	1.08	0.40	0.75	56	96	4.01	1.05	0.05	0.77	-0.02	0.00
VB446945	1,162	3.69	1.13	3.67	1.12	-0.01	0.46	0.79	59	96	0.79	3.78	1.12	0.36	0.71	52	93	3.77	1.09	0.08	0.72	-0.08	-0.07
VB457580	1,901	3.82	1.07	3.78	1.09	-0.03	0.45	0.77	59	96	0.77	3.84	1.12	0.38	0.75	54	96	3.84	1.09	0.02	0.77	-0.02	0.00
VB457763	947	3.69	1.06	3.68	1.04	0.00	0.41	0.74	57	96	0.74	3.65	1.12	0.40	0.77	55	96	3.65	1.11	-0.04	0.79	0.03	0.05
VB457764	1,071	3.85	1.12	3.86	1.13	0.01	0.43	0.79	57	97	0.79	3.84	1.11	0.42	0.77	56	96	3.84	1.08	-0.01	0.79	-0.02	0.00
VB457772	2,495	3.84	1.08	3.85	1.09	0.01	0.45	0.78	59	97	0.78	3.83	1.13	0.38	0.75	54	96	3.83	1.10	-0.01	0.78	-0.03	0.00
VB457773	2,098	3.82	1.08	3.82	1.10	0.00	0.47	0.80	61	97	0.80	3.85	1.11	0.40	0.75	55	95	3.85	1.07	0.03	0.77	-0.05	-0.03
VB457774	1,787	3.95	1.10	3.93	1.08	-0.01	0.47	0.79	60	97	0.79	3.94	1.06	0.37	0.73	54	95	3.93	1.03	-0.01	0.75	-0.06	-0.04
VB457775	1,299	3.84	1.14	3.86	1.12	0.02	0.46	0.81	59	97	0.81	3.85	1.09	0.36	0.72	52	94	3.84	1.07	0.00	0.74	-0.09	-0.07
VB457776	1,660	3.84	1.11	3.82	1.10	-0.02	0.47	0.80	60	97	0.80	3.84	1.12	0.37	0.74	53	95	3.84	1.09	0.00	0.76	-0.06	-0.04
VB459256	742	3.64	1.01	3.65	1.05	0.02	0.38	0.73	55	96	0.73	3.68	1.11	0.38	0.72	54	95	3.67	1.08	0.04	0.76	-0.01	0.03
VB459258	2,494	3.58	1.12	3.58	1.11	0.00	0.43	0.78	57	96	0.78	3.56	1.10	0.35	0.72	51	94	3.56	1.08	-0.02	0.75	-0.06	-0.03
VB459914	2,494	3.68	1.10	3.70	1.10	0.02	0.44	0.79	58	97	0.79	3.72	1.09	0.36	0.71	52	94	3.72	1.07	0.03	0.73	-0.08	-0.06
VB461783	2,495	3.76	1.08	3.74	1.07	-0.02	0.42	0.77	57	97	0.77	3.78	1.10	0.38	0.74	54	95	3.77	1.07	0.01	0.76	-0.03	-0.01
VB461793	2,493	3.67	1.07	3.67	1.07	0.00	0.43	0.76	57	96	0.76	3.65	1.09	0.33	0.69	50	93	3.65	1.07	-0.02	0.72	-0.07	-0.04
VB461797	2,491	3.74	1.11	3.74	1.08	0.00	0.46	0.79	60	97	0.79	3.71	1.11	0.36	0.73	52	95	3.71	1.09	-0.03	0.76	-0.06	-0.03
VB461799	2,265	3.91	1.11	3.90	1.10	-0.01	0.44	0.77	57	96	0.77	3.94	1.07	0.39	0.74	54	95	3.93	1.05	0.02	0.77	-0.03	0.00
VB462970	1,283	3.52	1.15	3.57	1.18	0.04	0.47	0.82	59	97	0.82	3.54	1.11	0.34	0.71	49	94	3.51	1.10	-0.01	0.74	-0.11	-0.08
VB462972	2,490	3.63	1.11	3.65	1.11	0.02	0.48	0.81	61	97	0.81	3.70	1.11	0.35	0.72	51	94	3.69	1.08	0.05	0.74	-0.09	-0.07
VP000344	2,494	3.62	1.22	3.61	1.21	-0.01	0.49	0.83	61	97	0.83	3.64	1.12	0.32	0.72	48	93	3.64	1.10	0.01	0.74	-0.11	-0.09

		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
VP000351	2,493	3.59	1.11	3.62	1.12	0.02	0.44	0.79	58	97	0.79	3.64	1.14	0.36	0.74	52	94	3.63	1.12	0.04	0.76	-0.05	-0.03
VP000357	1,789	3.70	1.06	3.72	1.05	0.02	0.40	0.75	56	97	0.75	3.63	1.10	0.37	0.75	53	97	3.62	1.08	-0.08	0.77	0.00	0.02
VP000360	2,493	3.78	1.11	3.78	1.10	0.00	0.47	0.80	60	97	0.80	3.77	1.09	0.35	0.73	51	95	3.76	1.09	-0.02	0.76	-0.07	-0.04

Note. Shaded cells indicate values that failed to meet the threshold. adj = adjacent, H1 = Human 1, H2 = Human 2, std diff = standardized difference , wtd = weighted.

Table F6

Agreement With Human Scores on Argument Prompts: Prompt-Specific (PS) Model

		H1 by H2										H1 by e-rater (rounded to integers)							H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater							e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded - H1 by H2	H1 by e-rater unrounded - H1 by H2
Average	2,070	3.76	1.11	3.76	1.11	0.00	0.44	0.78	58	97	0.78	3.70	1.12	0.37	0.76	53	96	3.69	1.10	-0.06	0.78	-0.03	0.00
GM010069	1,226	3.57	1.16	3.56	1.13	0.00	0.45	0.79	58	97	0.79	3.53	1.20	0.30	0.72	46	93	3.51	1.19	-0.05	0.74	-0.07	-0.05
GM010070	2,497	3.76	1.03	3.76	1.03	0.00	0.44	0.76	59	97	0.76	3.74	1.02	0.39	0.75	56	98	3.73	0.99	-0.03	0.79	-0.01	0.03
GM010071	646	3.82	1.07	3.82	1.04	0.00	0.41	0.77	56	97	0.77	3.68	1.08	0.42	0.77	57	97	3.69	1.05	-0.12	0.80	0.00	0.03
GM010072	2,489	3.60	1.10	3.62	1.11	0.01	0.44	0.76	58	96	0.76	3.57	1.06	0.32	0.71	49	95	3.57	1.03	-0.03	0.74	-0.05	-0.02
GM010074	1,486	3.83	1.08	3.85	1.05	0.02	0.44	0.78	59	97	0.78	3.77	1.09	0.43	0.79	57	98	3.77	1.06	-0.05	0.82	0.01	0.04
GM010082	2,495	3.70	1.11	3.71	1.10	0.01	0.45	0.79	59	97	0.79	3.69	1.14	0.39	0.77	54	96	3.69	1.12	-0.02	0.80	-0.02	0.01
GM010084	2,229	3.71	1.12	3.70	1.14	-0.01	0.44	0.77	57	96	0.77	3.54	1.14	0.32	0.74	49	95	3.55	1.12	-0.14	0.77	-0.03	0.00
GM010085	2,493	3.80	1.07	3.76	1.06	-0.04	0.45	0.78	59	97	0.78	3.71	1.09	0.40	0.77	56	97	3.69	1.07	-0.10	0.80	-0.01	0.02
IJ100114	1,486	3.68	1.09	3.67	1.07	-0.01	0.45	0.78	59	97	0.78	3.65	1.11	0.39	0.76	54	97	3.64	1.09	-0.04	0.79	-0.02	0.01
IJ100117	2,495	3.87	1.06	3.86	1.04	-0.01	0.43	0.75	58	96	0.75	3.80	1.07	0.39	0.75	55	97	3.81	1.03	-0.06	0.78	0.00	0.03
IJ100118	2,494	3.87	1.03	3.85	1.06	-0.02	0.43	0.77	59	97	0.77	3.77	1.10	0.40	0.77	56	97	3.78	1.07	-0.09	0.80	0.00	0.03
IJ100119	2,495	3.74	1.05	3.75	1.07	0.00	0.43	0.77	58	97	0.77	3.71	1.09	0.39	0.76	55	97	3.69	1.06	-0.05	0.79	-0.01	0.02
IJ100121	1,308	3.70	1.11	3.69	1.15	0.00	0.44	0.79	58	96	0.79	3.59	1.10	0.35	0.73	51	95	3.57	1.07	-0.11	0.76	-0.06	-0.03
IJ100122	2,492	3.78	1.11	3.77	1.10	-0.01	0.46	0.78	60	97	0.78	3.74	1.13	0.38	0.76	54	95	3.73	1.11	-0.05	0.78	-0.02	0.00
NK000775	2,496	3.75	1.05	3.71	1.06	-0.03	0.44	0.76	59	96	0.76	3.68	1.09	0.36	0.74	53	96	3.68	1.07	-0.07	0.77	-0.02	0.01
NK000776	2,493	3.71	1.06	3.69	1.06	-0.03	0.38	0.72	55	95	0.72	3.62	1.11	0.32	0.72	50	95	3.61	1.09	-0.10	0.75	0.00	0.03

		H1 by H2										H1 by e-rater (rounded to integers)							H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater							e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded - H1 by H2	H1 by e-rater unrounded - H1 by H2
NK000777	2,499	3.86	1.06	3.84	1.08	-0.02	0.45	0.79	59	98	0.79	3.84	1.14	0.41	0.78	56	97	3.83	1.11	-0.03	0.81	-0.01	0.02
NK000778	882	3.89	1.14	3.88	1.11	-0.01	0.41	0.77	55	95	0.77	3.82	1.13	0.42	0.79	56	96	3.81	1.11	-0.07	0.80	0.02	0.03
NK000780	2,496	3.69	1.09	3.70	1.10	0.01	0.42	0.77	56	96	0.77	3.62	1.10	0.37	0.76	53	96	3.62	1.09	-0.07	0.78	-0.01	0.01
NK000784	2,036	3.67	1.13	3.66	1.14	0.00	0.45	0.79	58	96	0.79	3.57	1.15	0.33	0.74	49	95	3.57	1.13	-0.09	0.77	-0.05	-0.02
QP003711	2,495	3.59	1.14	3.58	1.14	-0.01	0.44	0.77	58	95	0.77	3.58	1.11	0.34	0.72	50	94	3.57	1.09	-0.02	0.74	-0.05	-0.03
QP003712	1,727	3.52	1.18	3.51	1.18	-0.01	0.40	0.77	54	95	0.77	3.37	1.22	0.29	0.73	45	93	3.36	1.21	-0.14	0.76	-0.04	-0.01
QP003714	724	3.64	1.14	3.67	1.16	0.03	0.42	0.76	55	95	0.77	3.59	1.16	0.30	0.72	47	94	3.58	1.15	-0.04	0.74	-0.04	-0.03
QP003716	1,222	3.88	1.10	3.89	1.14	0.01	0.46	0.81	59	98	0.81	3.78	1.11	0.40	0.78	55	97	3.76	1.09	-0.10	0.81	-0.03	0.00
QP003719	2,492	3.77	1.09	3.76	1.09	-0.01	0.41	0.77	56	97	0.77	3.70	1.11	0.35	0.74	52	95	3.70	1.08	-0.07	0.77	-0.03	0.00
QP003720	1,836	3.68	1.10	3.68	1.09	0.00	0.42	0.77	57	96	0.77	3.61	1.12	0.35	0.74	51	95	3.61	1.10	-0.06	0.76	-0.03	-0.01
QP003721	2,486	3.80	1.19	3.76	1.18	-0.03	0.45	0.82	58	97	0.82	3.62	1.25	0.32	0.76	47	94	3.61	1.27	-0.16	0.79	-0.06	-0.03
QP003722	2,488	3.92	1.08	3.93	1.09	0.01	0.44	0.78	58	97	0.78	3.87	1.13	0.38	0.77	54	97	3.87	1.11	-0.04	0.80	-0.01	0.02
SG100628	2,120	3.73	1.10	3.71	1.12	-0.02	0.45	0.78	59	96	0.78	3.68	1.08	0.36	0.75	52	96	3.68	1.06	-0.04	0.78	-0.03	0.00
SG100632	2,496	3.78	1.06	3.77	1.03	-0.02	0.45	0.77	60	97	0.77	3.71	1.02	0.37	0.75	54	97	3.70	0.99	-0.08	0.78	-0.02	0.01
SG100634	2,488	3.86	1.08	3.83	1.08	-0.03	0.42	0.77	57	97	0.78	3.85	1.16	0.40	0.77	55	96	3.85	1.15	-0.01	0.79	0.00	0.01
SG100636	2,490	3.79	1.10	3.80	1.07	0.01	0.42	0.76	57	97	0.76	3.73	1.09	0.40	0.78	56	97	3.72	1.05	-0.06	0.81	0.02	0.05
SG100638	2,492	3.85	1.07	3.85	1.05	0.00	0.43	0.78	58	98	0.78	3.79	1.09	0.44	0.78	58	97	3.78	1.06	-0.06	0.81	0.00	0.03
SG100642	1,820	3.79	1.09	3.81	1.10	0.02	0.45	0.78	59	97	0.78	3.75	1.12	0.38	0.76	54	96	3.73	1.10	-0.05	0.79	-0.02	0.01
SG100643	955	3.72	1.15	3.71	1.15	-0.01	0.43	0.79	57	96	0.79	3.59	1.21	0.38	0.76	52	94	3.59	1.19	-0.11	0.78	-0.03	-0.01
SG100645	2,496	3.72	1.18	3.74	1.17	0.02	0.48	0.81	60	96	0.81	3.71	1.12	0.36	0.75	51	95	3.71	1.10	-0.01	0.78	-0.06	-0.03

		H1 by H2										H1 by e-rater (rounded to integers)							H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater							e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded - H1 by H2	H1 by e-rater unrounded - H1 by H2
SG100646	1,478	3.87	1.07	3.89	1.05	0.02	0.46	0.78	60	97	0.78	3.83	1.10	0.39	0.76	55	96	3.82	1.07	-0.04	0.78	-0.02	0.00
SG100647	2,491	3.84	1.01	3.83	1.03	-0.01	0.42	0.75	58	97	0.75	3.74	1.07	0.41	0.76	57	97	3.75	1.04	-0.09	0.79	0.01	0.04
SG100648	2,496	3.74	1.10	3.73	1.13	-0.01	0.45	0.79	59	97	0.79	3.58	1.17	0.35	0.76	51	95	3.57	1.14	-0.15	0.79	-0.03	0.00
SP001691	2,494	3.59	1.05	3.59	1.06	0.00	0.42	0.76	57	97	0.76	3.48	1.11	0.34	0.74	51	96	3.48	1.09	-0.11	0.78	-0.02	0.02
SP001692	2,493	3.85	1.14	3.80	1.12	-0.04	0.42	0.79	56	97	0.79	3.81	1.11	0.39	0.77	54	96	3.80	1.09	-0.05	0.80	-0.02	0.01
VA165162	2,402	3.81	1.07	3.81	1.09	0.00	0.43	0.76	58	96	0.76	3.75	1.08	0.39	0.76	55	96	3.75	1.06	-0.06	0.78	0.00	0.02
VA165163	2,494	3.82	1.14	3.83	1.13	0.00	0.47	0.79	60	96	0.79	3.72	1.11	0.37	0.76	52	96	3.71	1.09	-0.10	0.79	-0.03	0.00
VA165170	1,707	3.79	1.10	3.78	1.09	0.00	0.42	0.78	57	96	0.78	3.74	1.14	0.36	0.76	52	96	3.74	1.11	-0.04	0.79	-0.02	0.01
VA165172	1,088	3.79	1.13	3.77	1.13	-0.02	0.46	0.80	59	97	0.80	3.73	1.09	0.39	0.78	54	97	3.72	1.06	-0.07	0.81	-0.02	0.01
VA165174	2,496	3.69	1.07	3.71	1.09	0.01	0.46	0.79	60	98	0.79	3.63	1.15	0.39	0.78	54	98	3.62	1.12	-0.07	0.80	-0.01	0.01
VA165175	884	3.84	1.11	3.85	1.10	0.01	0.46	0.78	59	96	0.78	3.84	1.11	0.37	0.73	53	95	3.82	1.09	-0.02	0.76	-0.05	-0.02
VA165180	2,487	4.04	1.07	3.99	1.05	-0.04	0.42	0.78	57	98	0.78	3.97	1.09	0.38	0.76	54	97	3.97	1.06	-0.06	0.79	-0.02	0.01
VA165182	2,482	3.95	1.10	3.96	1.09	0.01	0.44	0.79	58	97	0.79	3.86	1.16	0.37	0.77	53	96	3.87	1.12	-0.07	0.80	-0.02	0.01
VB155562	2,485	3.78	1.16	3.77	1.16	-0.01	0.45	0.80	58	96	0.80	3.69	1.15	0.38	0.77	53	96	3.68	1.14	-0.08	0.79	-0.03	-0.01
VB155564	1,158	3.79	1.12	3.85	1.12	0.05	0.44	0.80	57	98	0.80	3.75	1.13	0.35	0.76	51	97	3.75	1.10	-0.04	0.79	-0.04	-0.01
VB155565	1,066	3.74	1.12	3.74	1.11	-0.01	0.43	0.80	57	98	0.80	3.69	1.16	0.36	0.77	52	96	3.68	1.15	-0.05	0.79	-0.03	-0.01
VB155569	2,314	3.84	1.04	3.82	1.04	-0.02	0.45	0.77	60	97	0.77	3.85	1.05	0.43	0.77	59	97	3.85	1.02	0.00	0.79	0.00	0.02
VB155573	1,080	3.89	1.15	3.87	1.14	-0.02	0.43	0.81	56	98	0.81	3.77	1.18	0.37	0.78	52	97	3.74	1.18	-0.13	0.81	-0.03	0.00
VB155574	2,490	3.85	1.11	3.81	1.08	-0.04	0.40	0.77	55	97	0.77	3.81	1.09	0.36	0.75	53	96	3.81	1.07	-0.04	0.78	-0.02	0.01
VB155575	2,485	3.77	1.18	3.80	1.18	0.03	0.45	0.80	57	96	0.80	3.72	1.17	0.34	0.76	49	95	3.73	1.16	-0.04	0.78	-0.04	-0.02

		H1 by H2										H1 by e-rater (rounded to integers)							H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater							e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded - H1 by H2	H1 by e-rater unrounded - H1 by H2
VB156707	2,152	3.75	1.09	3.76	1.08	0.01	0.40	0.73	55	95	0.73	3.62	1.12	0.34	0.73	50	95	3.62	1.10	-0.12	0.77	0.00	0.04
VB156806	1,066	3.74	1.14	3.74	1.12	0.00	0.42	0.77	56	96	0.77	3.66	1.15	0.34	0.74	50	95	3.63	1.13	-0.10	0.77	-0.03	0.00
VB158584	2,489	3.78	1.12	3.80	1.12	0.02	0.46	0.81	59	97	0.81	3.76	1.17	0.38	0.77	53	96	3.75	1.15	-0.02	0.80	-0.04	-0.01
VB158585	2,494	3.80	1.14	3.77	1.11	-0.03	0.45	0.80	58	97	0.80	3.67	1.11	0.33	0.74	50	95	3.67	1.08	-0.11	0.76	-0.06	-0.04
VB158614	2,494	3.65	1.14	3.65	1.13	0.00	0.47	0.80	60	97	0.80	3.62	1.11	0.37	0.75	53	96	3.62	1.09	-0.03	0.78	-0.05	-0.02
VB158615	904	3.64	1.14	3.69	1.16	0.04	0.41	0.77	55	95	0.77	3.65	1.15	0.31	0.73	48	95	3.65	1.12	0.01	0.75	-0.04	-0.02
VB158617	2,486	3.68	1.13	3.65	1.11	-0.03	0.48	0.79	60	96	0.79	3.60	1.08	0.37	0.74	52	95	3.59	1.06	-0.08	0.77	-0.05	-0.02
VB158619	2,499	3.73	1.08	3.72	1.08	-0.01	0.46	0.78	60	97	0.78	3.66	1.09	0.38	0.76	54	96	3.65	1.07	-0.07	0.79	-0.02	0.01
VB158620	2,491	3.92	1.13	3.87	1.12	-0.04	0.48	0.82	61	98	0.82	3.87	1.15	0.39	0.78	55	96	3.87	1.12	-0.04	0.80	-0.04	-0.02
VB161364	379	3.71	1.12	3.73	1.12	0.02	0.37	0.76	53	96	0.76	3.69	1.09	0.42	0.76	56	95	3.68	1.07	-0.03	0.77	0.00	0.01
VB161365	2,376	3.81	1.15	3.83	1.17	0.02	0.43	0.78	57	96	0.78	3.72	1.16	0.37	0.77	52	96	3.71	1.15	-0.08	0.79	-0.01	0.01
VB161421	1,592	3.95	1.14	3.95	1.14	0.01	0.43	0.79	57	96	0.79	3.83	1.19	0.36	0.77	52	96	3.81	1.17	-0.12	0.80	-0.02	0.01
VB161422	2,494	3.74	1.13	3.71	1.13	-0.03	0.47	0.78	60	96	0.79	3.67	1.12	0.38	0.76	53	95	3.67	1.08	-0.07	0.78	-0.02	-0.01
VB161423	2,489	3.77	1.16	3.76	1.15	-0.01	0.46	0.80	59	96	0.80	3.77	1.14	0.37	0.77	52	96	3.77	1.11	0.00	0.79	-0.03	-0.01
VB161426	1,681	3.67	1.08	3.68	1.07	0.01	0.49	0.80	62	98	0.80	3.69	1.09	0.41	0.75	56	95	3.69	1.05	0.01	0.77	-0.05	-0.03
VB161428	2,416	3.62	1.14	3.61	1.15	-0.01	0.46	0.79	59	96	0.79	3.54	1.18	0.32	0.72	48	94	3.52	1.16	-0.08	0.75	-0.07	-0.04
VB161430	2,484	3.64	1.19	3.63	1.19	-0.01	0.48	0.82	60	96	0.82	3.59	1.19	0.36	0.78	50	96	3.58	1.17	-0.05	0.80	-0.04	-0.02
VB161432	1,558	3.74	1.14	3.70	1.12	-0.03	0.41	0.78	56	96	0.78	3.63	1.17	0.36	0.76	51	95	3.63	1.16	-0.10	0.79	-0.02	0.01
VB161433	2,492	3.70	1.19	3.73	1.18	0.02	0.48	0.82	60	97	0.82	3.66	1.18	0.35	0.74	50	94	3.65	1.15	-0.04	0.76	-0.08	-0.06
VB161447	1,281	3.94	1.10	3.95	1.10	0.01	0.46	0.80	60	97	0.80	3.93	1.14	0.39	0.76	54	96	3.93	1.12	-0.01	0.79	-0.04	-0.01

		H1 by H2										H1 by e-rater (rounded to integers)							H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater							e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded - H1 by H2	H1 by e-rater unrounded - H1 by H2
VB161451	2,122	3.67	1.21	3.66	1.20	-0.01	0.48	0.83	60	97	0.83	3.59	1.22	0.33	0.77	48	95	3.57	1.22	-0.08	0.78	-0.06	-0.05
VB161459	2,486	3.88	1.11	3.89	1.12	0.00	0.45	0.80	59	97	0.80	3.86	1.15	0.40	0.77	55	96	3.86	1.11	-0.02	0.80	-0.03	0.00
VB184311	2,492	3.72	1.13	3.73	1.15	0.01	0.43	0.78	57	96	0.78	3.59	1.18	0.33	0.75	49	95	3.58	1.17	-0.12	0.78	-0.03	0.00
VB184312	2,491	3.80	1.12	3.84	1.12	0.03	0.46	0.81	59	98	0.81	3.76	1.13	0.40	0.77	55	96	3.77	1.10	-0.03	0.80	-0.04	-0.01
VB184314	2,489	3.75	1.21	3.74	1.20	-0.01	0.47	0.82	59	96	0.82	3.67	1.16	0.38	0.78	52	96	3.67	1.15	-0.07	0.81	-0.04	-0.01
VB184315	383	3.91	1.05	3.96	1.07	0.04	0.46	0.76	60	96	0.76	3.83	1.05	0.34	0.74	52	97	3.85	1.02	-0.06	0.78	-0.02	0.02
VB184321	2,483	3.83	1.16	3.83	1.16	-0.01	0.46	0.81	59	97	0.81	3.80	1.15	0.40	0.77	54	96	3.80	1.13	-0.03	0.80	-0.04	-0.01
VB184323	2,495	3.78	1.08	3.78	1.08	0.01	0.45	0.78	59	97	0.78	3.75	1.11	0.37	0.74	53	96	3.74	1.08	-0.03	0.77	-0.04	-0.01
VB184331	2,417	3.53	1.17	3.51	1.15	-0.02	0.44	0.77	57	94	0.77	3.42	1.15	0.31	0.74	47	94	3.41	1.13	-0.10	0.76	-0.03	-0.01
VB184333	2,492	3.67	1.11	3.66	1.09	-0.01	0.44	0.78	58	96	0.78	3.59	1.12	0.34	0.75	50	96	3.58	1.10	-0.08	0.78	-0.03	0.00
VB184343	2,491	3.82	1.06	3.78	1.08	-0.04	0.41	0.77	56	97	0.77	3.78	1.13	0.39	0.76	54	97	3.77	1.10	-0.05	0.79	-0.01	0.02
VB185821	1,202	3.91	1.07	3.85	1.03	-0.06	0.43	0.76	58	97	0.76	3.79	1.12	0.33	0.75	50	97	3.79	1.10	-0.12	0.78	-0.01	0.02
VB185823	2,133	3.62	1.15	3.59	1.15	-0.02	0.50	0.82	62	97	0.82	3.57	1.15	0.33	0.74	49	94	3.56	1.13	-0.05	0.76	-0.08	-0.06
VB188681	2,495	3.81	1.06	3.85	1.05	0.03	0.47	0.79	61	98	0.79	3.78	1.07	0.40	0.76	56	97	3.78	1.03	-0.03	0.79	-0.03	0.00
VB188682	2,492	3.80	1.13	3.79	1.15	-0.01	0.48	0.81	61	97	0.81	3.72	1.11	0.39	0.76	54	96	3.72	1.08	-0.07	0.79	-0.05	-0.02
VB421805	1,568	3.72	1.16	3.78	1.17	0.05	0.47	0.81	60	97	0.82	3.65	1.18	0.39	0.79	54	96	3.64	1.17	-0.07	0.81	-0.02	-0.01
VB439631	2,497	3.78	1.02	3.79	1.03	0.01	0.43	0.77	59	97	0.77	3.79	1.02	0.42	0.76	58	98	3.77	1.00	-0.01	0.79	-0.01	0.02
VB439632	2,498	3.77	1.10	3.74	1.07	-0.03	0.44	0.77	58	97	0.77	3.58	1.17	0.32	0.75	48	96	3.58	1.16	-0.17	0.79	-0.02	0.02
VB439633	2,492	3.79	1.11	3.80	1.09	0.01	0.43	0.78	57	97	0.78	3.71	1.11	0.41	0.78	56	97	3.71	1.10	-0.08	0.80	0.00	0.02
VB439637	2,491	3.75	1.09	3.77	1.10	0.01	0.42	0.78	57	97	0.78	3.77	1.15	0.39	0.76	54	96	3.76	1.12	0.01	0.79	-0.02	0.01

		H1 by H2										H1 by e-rater (rounded to integers)							H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater							e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded - H1 by H2	H1 by e-rater unrounded - H1 by H2
VB439638	2,492	3.89	1.06	3.89	1.07	0.00	0.43	0.78	58	98	0.78	3.84	1.08	0.40	0.78	56	98	3.84	1.05	-0.04	0.81	0.00	0.03
VB445396	2,493	3.65	1.15	3.68	1.16	0.02	0.48	0.80	60	97	0.81	3.61	1.18	0.36	0.76	51	95	3.60	1.17	-0.04	0.78	-0.04	-0.03
VB445397	1,512	3.79	1.18	3.78	1.18	0.00	0.49	0.82	61	97	0.82	3.69	1.15	0.37	0.77	51	96	3.69	1.13	-0.08	0.80	-0.05	-0.02
VB445398	1,826	3.76	1.12	3.74	1.14	-0.02	0.45	0.79	59	96	0.79	3.69	1.18	0.38	0.78	53	96	3.67	1.15	-0.07	0.80	-0.01	0.01
VB445399	2,320	3.81	1.11	3.78	1.11	-0.02	0.43	0.78	57	97	0.78	3.74	1.12	0.36	0.76	52	96	3.74	1.10	-0.06	0.78	-0.02	0.00
VB445401	1,244	3.79	1.07	3.77	1.09	-0.01	0.39	0.77	54	97	0.77	3.79	1.09	0.37	0.75	53	96	3.79	1.08	0.00	0.79	-0.02	0.02
VB446102	2,492	3.65	1.07	3.64	1.07	-0.01	0.47	0.79	61	97	0.79	3.59	1.11	0.39	0.77	55	97	3.59	1.09	-0.06	0.80	-0.02	0.01
VB446103	2,494	3.74	1.10	3.73	1.10	-0.01	0.42	0.76	57	95	0.76	3.66	1.14	0.37	0.75	52	95	3.67	1.11	-0.07	0.77	-0.01	0.01
VB446104	882	3.68	1.05	3.65	1.06	-0.02	0.36	0.72	53	96	0.72	3.63	1.04	0.40	0.75	56	97	3.62	1.01	-0.05	0.77	0.03	0.05
VB446105	2,495	3.72	1.07	3.69	1.08	-0.03	0.40	0.75	55	96	0.75	3.66	1.08	0.36	0.74	52	96	3.66	1.06	-0.05	0.77	-0.01	0.02
VB446108	2,493	3.86	1.12	3.86	1.08	0.00	0.43	0.79	58	97	0.79	3.76	1.16	0.40	0.79	55	97	3.77	1.15	-0.08	0.81	0.00	0.02
VB446110	2,492	3.85	1.07	3.87	1.08	0.02	0.45	0.79	59	98	0.79	3.87	1.11	0.41	0.78	56	97	3.87	1.08	0.02	0.81	-0.01	0.02
VB446112	2,488	3.85	1.09	3.86	1.10	0.01	0.49	0.81	62	98	0.81	3.78	1.14	0.40	0.78	55	97	3.77	1.12	-0.07	0.80	-0.03	-0.01
VB446113	1,220	3.54	1.14	3.55	1.17	0.01	0.46	0.78	59	95	0.79	3.53	1.13	0.34	0.75	50	96	3.52	1.10	-0.02	0.77	-0.03	-0.02
VB446114	2,497	3.71	1.04	3.68	1.05	-0.03	0.43	0.77	58	97	0.77	3.68	1.07	0.37	0.75	54	97	3.68	1.04	-0.04	0.78	-0.02	0.01
VB446116	2,305	3.61	1.04	3.61	1.07	-0.01	0.40	0.75	56	96	0.75	3.58	1.04	0.39	0.74	55	97	3.58	1.03	-0.04	0.77	-0.01	0.02
VB446118	2,493	3.79	1.08	3.80	1.08	0.00	0.41	0.75	56	96	0.75	3.78	1.10	0.37	0.75	53	96	3.78	1.07	-0.01	0.78	0.00	0.03
VB446202	2,431	3.85	1.13	3.84	1.11	-0.01	0.46	0.81	59	97	0.81	3.80	1.14	0.40	0.78	55	97	3.79	1.12	-0.05	0.82	-0.03	0.01
VB446204	2,491	3.66	1.08	3.64	1.06	-0.02	0.40	0.76	55	97	0.76	3.65	1.10	0.35	0.73	52	95	3.65	1.08	-0.01	0.76	-0.03	0.00
VB446205	1,474	3.62	1.16	3.60	1.17	-0.02	0.48	0.81	60	97	0.81	3.54	1.16	0.31	0.74	47	94	3.55	1.13	-0.07	0.76	-0.07	-0.05

		H1 by H2										H1 by e-rater (rounded to integers)							H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater							e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded - H1 by H2	H1 by e-rater unrounded - H1 by H2
VB446215	2,491	3.96	1.04	3.97	1.04	0.02	0.44	0.77	59	97	0.77	3.89	1.03	0.41	0.78	57	98	3.89	0.99	-0.07	0.81	0.01	0.04
VB446945	1,162	3.69	1.13	3.67	1.12	-0.01	0.46	0.79	59	96	0.79	3.72	1.13	0.33	0.72	49	94	3.71	1.11	0.02	0.75	-0.07	-0.04
VB457580	1,901	3.82	1.07	3.78	1.09	-0.03	0.45	0.77	59	96	0.77	3.78	1.04	0.40	0.76	56	98	3.79	1.00	-0.03	0.79	-0.01	0.02
VB457763	947	3.69	1.06	3.68	1.04	0.00	0.41	0.74	57	96	0.74	3.59	1.09	0.39	0.77	55	97	3.58	1.05	-0.10	0.80	0.03	0.06
VB457764	1,071	3.85	1.12	3.86	1.13	0.01	0.43	0.79	57	97	0.79	3.73	1.16	0.40	0.78	55	96	3.75	1.13	-0.09	0.81	-0.01	0.02
VB457772	2,495	3.84	1.08	3.85	1.09	0.01	0.45	0.78	59	97	0.78	3.76	1.06	0.40	0.78	56	98	3.77	1.04	-0.06	0.80	0.00	0.02
VB457773	2,098	3.82	1.08	3.82	1.10	0.00	0.47	0.80	61	97	0.80	3.82	1.11	0.39	0.77	55	97	3.80	1.07	-0.02	0.79	-0.03	-0.01
VB457774	1,787	3.95	1.10	3.93	1.08	-0.01	0.47	0.79	60	97	0.79	3.90	1.15	0.38	0.76	53	96	3.88	1.12	-0.06	0.78	-0.03	-0.01
VB457775	1,299	3.84	1.14	3.86	1.12	0.02	0.46	0.81	59	97	0.81	3.80	1.12	0.36	0.74	52	95	3.80	1.11	-0.04	0.77	-0.07	-0.04
VB457776	1,660	3.84	1.11	3.82	1.10	-0.02	0.47	0.80	60	97	0.80	3.79	1.16	0.37	0.76	52	96	3.79	1.12	-0.05	0.79	-0.04	-0.01
VB459256	742	3.64	1.01	3.65	1.05	0.02	0.38	0.73	55	96	0.73	3.64	1.08	0.38	0.73	54	96	3.64	1.05	0.00	0.77	0.00	0.04
VB459258	2,494	3.58	1.12	3.58	1.11	0.00	0.43	0.78	57	96	0.78	3.50	1.17	0.33	0.75	49	95	3.50	1.16	-0.07	0.77	-0.03	-0.01
VB459914	2,494	3.68	1.10	3.70	1.10	0.02	0.44	0.79	58	97	0.79	3.64	1.09	0.36	0.74	53	96	3.65	1.08	-0.03	0.77	-0.05	-0.02
VB461783	2,495	3.76	1.08	3.74	1.07	-0.02	0.42	0.77	57	97	0.77	3.69	1.08	0.39	0.76	55	97	3.68	1.06	-0.08	0.79	-0.01	0.02
VB461793	2,493	3.67	1.07	3.67	1.07	0.00	0.43	0.76	57	96	0.76	3.57	1.07	0.32	0.72	50	95	3.57	1.05	-0.09	0.76	-0.04	0.00
VB461797	2,491	3.74	1.11	3.74	1.08	0.00	0.46	0.79	60	97	0.79	3.66	1.10	0.37	0.76	53	96	3.65	1.07	-0.08	0.79	-0.03	0.00
VB461799	2,265	3.91	1.11	3.90	1.10	-0.01	0.44	0.77	57	96	0.77	3.90	1.09	0.41	0.78	56	97	3.89	1.06	-0.02	0.81	0.01	0.04
VB462970	1,283	3.52	1.15	3.57	1.18	0.04	0.47	0.82	59	97	0.82	3.53	1.17	0.37	0.75	51	95	3.52	1.15	0.00	0.78	-0.07	-0.04
VB462972	2,490	3.63	1.11	3.65	1.11	0.02	0.48	0.81	61	97	0.81	3.61	1.13	0.39	0.77	54	96	3.60	1.10	-0.03	0.80	-0.04	-0.01
VP000344	2,494	3.62	1.22	3.61	1.21	-0.01	0.49	0.83	61	97	0.83	3.52	1.21	0.35	0.78	50	95	3.51	1.19	-0.09	0.80	-0.05	-0.03

		H1 by H2										H1 by e-rater (rounded to integers)							H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater							e-rater				Wtd kappa	*R*
Prompt	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded - H1 by H2	H1 by e-rater unrounded - H1 by H2
VP000351	2,493	3.59	1.11	3.62	1.12	0.02	0.44	0.79	58	97	0.79	3.57	1.11	0.41	0.77	55	96	3.58	1.10	-0.01	0.80	-0.02	0.01
VP000357	1,789	3.70	1.06	3.72	1.05	0.02	0.40	0.75	56	97	0.75	3.60	1.09	0.35	0.75	52	96	3.60	1.06	-0.09	0.78	0.00	0.03
VP000360	2,493	3.78	1.11	3.78	1.10	0.00	0.47	0.80	60	97	0.80	3.69	1.13	0.35	0.76	52	96	3.68	1.13	-0.09	0.79	-0.04	-0.01

Note. Shaded cells indicate values that failed to meet the threshold. adj = adjacent, H1 = Human 1, H2 = Human 2, std diff = standardized difference , wtd = weighted.

Appendix G

Subgroup Differences

Table G1

Subgroup Differences for Issue Prompts: Generic Prompt-Specific Intercept (GPSI) Model

Issue-GPSI model		H1 by H2										H1 by e-rater (rounded to integers)							H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater							e-rater				Wtd kappa	*R*
Subgroup	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
Female	1,140	3.97	0.89	3.97	0.89	0.00	0.42	0.71	61	98	0.71	3.98	0.92	0.43	0.74	61	99	3.98	0.88	0.01	0.77	0.02	0.06
Male	821	3.79	1.02	3.78	1.01	0.00	0.42	0.76	58	97	0.76	3.76	1.02	0.42	0.76	58	98	3.76	0.99	-0.03	0.80	0.01	0.04
Caucasian	1,033	4.20	0.81	4.20	0.81	0.00	0.40	0.67	61	98	0.67	4.17	0.84	0.43	0.71	63	99	4.17	0.79	-0.04	0.75	0.04	0.08
Hispanic	95	3.86	0.89	3.84	0.90	-0.01	0.42	0.72	61	98	0.73	3.80	0.95	0.42	0.74	60	99	3.79	0.92	-0.07	0.79	0.02	0.06
Asian	173	3.57	0.97	3.57	0.97	0.00	0.40	0.72	58	97	0.72	3.66	1.01	0.38	0.73	55	97	3.66	0.98	0.10[c]	0.77	0.00	0.04
American Indian	22	3.08	1.03	3.07	1.05	-0.01	0.39	0.73	56	97	0.75	3.09	1.11	0.35	0.73	53	97	3.08	1.09	0.00	0.77	0.00	0.02
Other	101	3.72	1.02	3.72	1.02	0.00	0.41	0.75	57	97	0.75	3.73	1.03	0.40	0.75	57	98	3.72	0.99	0.01	0.79	0.01	0.04
English as the best language	1,595	4.00	0.91	4.00	0.91	0.00	0.42	0.72	60	98	0.72	3.98	0.93	0.43	0.74	61	99	3.98	0.89	-0.02	0.78	0.02	0.06
Japan[a]	34	3.02	0.85	3.01	0.84	-0.02	0.34	0.63	59	97	0.65	3.01	0.96	0.31	0.65	54	97	3.01	0.94	-0.01	0.72	0.02	0.07
Domestic[b]	1,512	4.08	0.87	4.08	0.86	0.00	0.42	0.71	61	98	0.71	4.04	0.91	0.44	0.74	62	99	4.04	0.87	-0.04	0.78	0.03	0.07
International	557	3.24	0.95	3.24	0.95	0.01	0.34	0.67	54	96	0.68	3.34	1.00	0.33	0.69	52	96	3.34	0.97	0.10[c]	0.72	0.01	0.05

Note. adj = adjacent, H1 = Human 1, H2 = Human 2, std diff = standardized difference, wtd = weighted.

[a]Other test center countries of interest were Taiwan, Hong-Kong, and Korea, but sample sizes were too small to report. [b]Includes test centers in the United States and Canada. [c]The value is less than 0.1000 before rounding, therefore it is not flagged.

Table G2

Subgroup Differences for Argument Prompts: Prompt-Specific (PS) Model

Argument- PS model		H1 by H2										H1 by e-rater (rounded to integers)						H1 by e-rater (unrounded)				Degradation	
		H1		H2								e-rater						e-rater				Wtd kappa	*R*
Subgroup	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj agree	*R*	M	SD	Kappa	Wtd kappa	% agree	% adj agree	M	SD	Std diff	*R*	H1 by e-rater rounded – H1 by H2	H1 by e-rater unrounded – H1 by H2
Female	1,145	3.86	1.07	3.86	1.07	0.00	0.44	0.77	59	97	0.77	3.83	1.08	0.37	0.74	53	96	3.83	1.05	-0.03	0.77	-0.03	-0.01
Male	817	3.70	1.12	3.70	1.12	0.00	0.44	0.78	57	97	0.79	3.61	1.14	0.37	0.77	52	96	3.60	1.12	-0.09	0.79	-0.02	0.01
Caucasian	1,046	4.08	1.02	4.08	1.02	0.00	0.44	0.75	59	97	0.75	4.05	0.99	0.37	0.71	55	96	4.05	0.96	-0.03	0.74	-0.04	-0.01
Hispanic	94	3.59	1.07	3.59	1.07	0.00	0.45	0.78	59	97	0.78	3.52	1.11	0.34	0.73	51	95	3.52	1.09	-0.07	0.76	-0.04	-0.02
Asian	170	3.61	1.08	3.61	1.09	0.00	0.41	0.75	56	96	0.76	3.59	1.10	0.35	0.74	52	96	3.59	1.08	-0.02	0.77	-0.01	0.02
American Indian	21	2.94	1.16	2.94	1.16	0.00	0.44	0.78	59	97	0.80	2.86	1.18	0.37	0.77	53	97	2.83	1.18	-0.10	0.81	-0.01	0.01
Other	100	3.65	1.13	3.65	1.12	0.00	0.42	0.78	56	96	0.78	3.59	1.14	0.36	0.76	52	96	3.58	1.12	-0.05	0.79	-0.02	0.00
English as the best language	1,600	3.87	1.08	3.87	1.08	0.00	0.45	0.78	59	97	0.78	3.82	1.09	0.37	0.75	53	96	3.81	1.06	-0.05	0.78	-0.03	0.00
Japan[a]	33	3.31	0.90	3.32	0.88	0.01	0.31	0.62	55	96	0.64	3.25	0.97	0.28	0.64	50	96	3.24	0.94	-0.07	0.69	0.02	0.05
Domestic[b]	1,520	3.94	1.06	3.94	1.06	0.00	0.45	0.78	60	97	0.78	3.89	1.08	0.37	0.74	54	96	3.88	1.05	-0.05	0.77	-0.04	-0.01
International	549	3.27	1.07	3.26	1.06	0.00	0.38	0.73	54	96	0.74	3.19	1.08	0.33	0.73	50	96	3.18	1.06	-0.08	0.76	0.00	0.03

Note. adj = adjacent, H1 = Human 1, H2 = Human 2, std diff = standardized difference, wtd = weighted.

[a]Other test center countries of interest were Taiwan, Hong-Kong, and Korea, but sample sizes were too small to report. [b]Includes test centers in United States and Canada.

Table G3

Subgroup Differences Under Final Check Score Model at 0.5 Threshold

	hstar by checkscore (< .5000)											
		Hstar		Checkscore					Stats			
Group	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj (< 0.5)	% adj (< 1.0)	*R*
Male	52,323	3.86	0.92	3.82	0.93	-0.05	0.79	0.97	81.85	99.91	100	0.97
Female	73,134	4.03	0.82	3.99	0.82	-0.05	0.79	0.97	82.78	99.95	100	0.97
White	66,304	4.25	0.74	4.21	0.75	-0.05	0.79	0.96	82.77	99.95	100	0.96
Black	8,045	3.62	0.78	3.58	0.80	-0.06	0.79	0.96	82.54	99.98	100	0.97
Asian	11,081	3.70	0.88	3.67	0.89	-0.03	0.80	0.97	82.78	99.96	100	0.97
Hispanic	5,977	3.86	0.82	3.81	0.83	-0.05	0.80	0.97	83.40	99.92	100	0.97
AmerInd	1,352	3.12	0.96	3.08	0.98	-0.05	0.78	0.97	81.29	99.70	100	0.98
Domestic	96,379	4.12	0.80	4.08	0.81	-0.05	0.79	0.97	82.68	99.95	100	0.97
International	36,025	3.38	0.86	3.35	0.87	-0.04	0.78	0.97	81.36	99.89	100	0.97
China	5,631	3.58	0.61	3.59	0.62	0.01	0.77	0.94	82.72	99.91	100	0.94
Taiwan	1,110	3.16	0.64	3.13	0.67	-0.05	0.77	0.95	82.52	99.91	100	0.95
Korea	582	3.31	0.73	3.28	0.75	-0.05	0.76	0.96	81.27	100.00	100	0.96
Japan	2,216	3.28	0.74	3.24	0.76	-0.05	0.77	0.96	81.81	99.91	100	0.96
Hongkong	133	3.94	0.66	3.94	0.68	0.00	0.75	0.95	80.45	100.00	100	0.95
Ability_Low	49,183	3.32	0.77	3.27	0.78	-0.06	0.79	0.96	82.47	99.90	100	0.96
Ability_Medium	66,760	4.19	0.70	4.15	0.70	-0.05	0.78	0.96	82.43	99.95	100	0.96
Ability_High	16,461	4.65	0.74	4.61	0.73	-0.06	0.77	0.96	81.42	99.96	100	0.96
White_male	23,184	4.30	0.76	4.25	0.76	-0.06	0.78	0.96	82.31	99.94	100	0.96
White_female	42,975	4.23	0.73	4.19	0.74	-0.05	0.79	0.96	83.00	99.95	100	0.96
Black_male	2,110	3.61	0.80	3.55	0.83	-0.07	0.77	0.96	80.81	100.00	100	0.97

hstar by checkscore (< .5000)												
		Hstar		Checkscore					Stats			
Group	*N*	M	SD	M	SD	Std diff	Kappa	Wtd kappa	% agree	% adj (< 0.5)	% adj (< 1.0)	*R*
Black_female	5,891	3.63	0.77	3.59	0.79	-0.06	0.8	0.97	83.21	99.97	100	0.97
Hispanic_male	2,068	3.83	0.86	3.79	0.87	-0.05	0.78	0.97	81.96	99.90	100	0.97
Hispanic_female	3,883	3.87	0.79	3.83	0.8	-0.05	0.81	0.97	84.16	99.92	100	0.97
Asian_male	5,535	3.57	0.87	3.53	0.88	-0.04	0.79	0.97	82.67	99.95	100	0.97
Asian_female	5,503	3.84	0.87	3.82	0.88	-0.03	0.80	0.97	82.81	99.98	100	0.97
AmerInd_male	840	2.86	0.89	2.82	0.91	-0.05	0.79	0.97	82.14	99.64	100	0.97
AmerInd_female	501	3.56	0.92	3.50	0.93	-0.06	0.76	0.97	79.84	99.80	100	0.97

Note. adj = adjacent, AmerInd = American Indian, hstar = the average of two human scores, std diff = standardized difference, wtd = weighted. The means of issue hstar and argument hstar are rounded to 0.5. Both issue and argument checks cores are rounded to 0.5 and then the mean is calculated and rounded to 0.5.