Thin Slices of Public Speaking: A look into speech thin slices and their effectiveness in accurately predicting whole-speech quality

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The ability to accurately perceive and decipher the surrounding world is essential for human interaction and survival (Ambady & Rosenthal, 1992). People are in constant observation of their surroundings, and in an instant, even under extremely miniscule glimpses, individuals readily and accurately form an impression on what they have witnessed (Carney, Colvin, & Hall, 2007). This skill is a social necessity that enables us to make sound decisions for our individual outcome, form appropriate impressions, and judge others accordingly in various settings. Through this judgment process individuals are able to predict, with a degree of certainty, the state, quality, or outcome of what they are viewing. Some examples include sexual orientation (Ambady, Hallahan, & Conner, 1999), sales effectiveness and achieved sales (Ambady, Krabeenhoft, & Hogan, 2006), and candidate hireability during job interviews (Ruben, Hall, & Schmid Mast, 2014; Frauendorfer, Schmid Mast, Nguyen, & Gatica-Perez, 2014b). Research in social psychology supports the accuracy of initial human judgment to

predict outcomes of interaction paradigms and identify personality characteristics through brief "thin slices" of observation (Ambady, Hallahan, & Conner, 1999; Ambady & Rosenthal, 1992; Curhan & Pentland, 2007; and Hack, 2014).

The term "Thin Slice," first coined and defined by Ambady and Rosenthal (1992), is a brief sample of behavior, not exceeding five minutes in length, extracted from the full-length behavior stream. These thin slices are an efficient means to form judgments and predict outcomes of interpersonal relations from the full-length behavior (Ambady, LaPlante, Johnson, 2001). Previous research using the thin slice method propels the following research questions for this proposed study: can the thin slice method be applied to judge the quality of college level speeches? Communication studies professors have claimed to be able to assess the quality of the speech they are observing within only 30-seconds (Hossman & Erickson, personal communication, 2015). Is this statement true or is it only based on the experience of the observer? Hence, can an individual through only the observation of speech thin slices accurately evaluate the overall quality of a speech? This proposed study aims to establish a framework to investigate and test these claims in hopes of finding an explanation as to whether or not thin slices can be used in the communication education arena to evaluate speeches. The implications of this study, if the findings suggest that the thin slice method can be used effectively to evaluate the overall quality of a speech, would be to apply the thin slice method in assisting universities with their assessment efforts pertaining both to the improvement of students' ability to speak proficiently and communication center operations.

Literature Review

Theoretical Framework

Impression Formation theory concerns itself with how one person is perceived by another (Roeckelein, 2006). Since its inception Impression Formation theory has focused on two major issues: "the meaning people give to their observations of others and how to measure exactly a perceiver's impressions of another" (Roeckelein, 2006, p.297). Thin slicing provides an answer to the latter of the two major issues, as thin slices are a measurement of impression. Through brief exposures to a phenomenon, individuals are able to form an accurate impression of an individual's characteristics, even as quickly as in the span of 39-50 milliseconds (Bar, Neta, & Linz, 2006; Naylor, 2007; Rule & Ambady, 2007; and Thoresen, Vuong, & Atkinson, 2012).

Moreover, within this theoretical framework of Impression Formation, the thin slice approach grants insight into the power of immediate impression formation as either the perceived or the perceiver. Thin slices grant a platform for a broader understanding of appropriate impression management tactics for accurate immediate perception, based on our settings and our desired outcome (Carney et al., 2007). This understanding allows individuals to behave based on how they wish to be perceived in their regular "day-to-day" interactions to promote healthful interpersonal relationships. These healthful interpersonal relationships are dependent on personal impression management and accurate impression formation of our interaction partner's conduct, even under brief moments of the interaction--for example interpersonal perception and personality disorders (Friedman et al., 2007) and detecting psychopathy (Fowler, Lilienfeld, and Patrick, 2009).

Furthermore, impression formation is used to measure the objective identity of an individual through a subjective impression construct (Tapp, 1984). This subjective construct is dictated by the information portrayed by the actor's and the perceiver's' observational skills

(Quinn, Macrae, & Bodenhausen, 2007). However, in addition to just forming an impression of an individual, impression formation allows the perceiver to assess, based on context, whether the actor is fit for a specific role. For example interviewing research has shown that interviewees, using both verbal and nonverbal cues, strive to make the best positive impression possible of themselves based on the job requirements (Liden, Martin, & Parsons, 1993), and that interviewers judge more favorably for hireability and performance based on positive impression management (Ruben, Hall, Schmid Mast, 2015).

In order for individuals to form these impressions accurately, a phase of information processing must take place before hand. "Humans are constantly acquiring, processing, and generating information or knowledge in their professional and personal lives (McGonigle and Mastrian, 2012, p. 23). Individuals process the incoming information that surrounds them into knowledge to understand the world. Individuals transform this vague surrounding information by processing it and making it clear and identifiable to themselves and relevant to their context (McGonigle & Mastrian, 2012).

This information-processing phase can be better understood through an example of the Brunswikian lens model. Brunswik's lens model was developed in the realm of cognitive psychology to investigate the linear estimation problem, "the judgment process in which probabilistic cues from the environment are related to some criterion" (Tapp, 1984, p.103). This means, the lens model aims to identify whether the cues perceived by the receiving state correlate accurately to the variable portraying the objective state. Ultimately, a high correlation between the perceived state and the objective state indicates an accurate perception of the relationship between the cues and the objective state's variable (Tapp, 1984). What this means is

that an objective state is transmitted and transformed into a subjective perception through the variables presented. Individuals are able to accurately process these variables of information and form an accurate impression of the information via their observation and perception.

Another model that clarifies the information-processing phase and its procedure is Bühler's Language model. Bühler's language model showcases the communicative function of language as a causal relationship between three forces: person one (p1), person 2 (p2), and a stimuli source. The model indicates that p1 identifies the source, produces the information, and this production then affects p2 as a stimulus for recognition of the source (Bühler, 1990). Most importantly, Bühler highlights how the stimuli source is a representation of our world through shared identifications, to accurately comprehend what is being communicated.

Moreover, Bühler's model shows how other extraneous factors surrounding the stimuli source may affect the entire interaction process. For example, p1 notices a pretty woman at a party and attempts to communicate this with p2. However, environmental acoustics distort accurate transmission; thus, p1 relies on head nodding in the direction of the source to relay the message. In this situation p2 as the receiver must process several pieces of information to reach the intended message. They must capture the information, decode what the information is identifying, and finally form an impression based on what they have received and how they have processed it. Bühler's model showcases how individuals are able to filter information throughout the processing phase to form an accurate impression. Research has even shown that information processing and impression formation can be accurately completed for judgment of a person's attractiveness, likeability, competence, and aggressiveness on average in only 100-miliseconds of exposure (Willis & Todorov, 2006).

Finally, it is evident that the impression formation and information processing literature suggests that individuals can form an accurate impression of a phenomenon even under extremely brief exposure time. Individuals are able to acquire, very quickly, objective pieces of information through distinct identifiable variables and form an impression of the phenomenon through their perception. This next section identifies "thin slicing" and how it is an accurate tool for information processing and is used to guide the impression formation of behaviors and predicting overall patterns of a phenomenon through only brief exposures of its happening.

Thin Slicing

As noted previously, a "thin slice" is a brief sample of behavior, not exceeding five minutes in length, extracted from the full-length behavior stream (Ambady & Rosenthal, 1992). In their pioneering study Ambady and Rosenthal (1993) assessed the accuracy of a complete stranger's judgment in predicting teachers' effectiveness in the classroom from 2, 5, and 10-second clips of their lectures compared to end-of-semester student evaluations of the teachers. Their findings indicated positive high correlations between stranger judgments and student evaluations through the use of thin slices as their means of observation.

Ambady and Rosenthal's (1993) study highlighted how the perceiver, even a complete stranger to the phenomenon, can accurately infer personality characteristics and interaction outcome from thin slices. Consequently, scholars have applied thin slicing to assess various interaction types. For example, Hall, Roter, Blanch, and Frankel, (2009b) assessed the nonverbal sensitivity of medical students. They explored male and female medical students' ability to accurately decode affective cues of rapport from their patients for assessment of overall patient-centered interaction effectiveness. The scholars found that in just the first minute of the

interaction's thin slice medical students were able to accurately predict the patient's rapport. Friedman, Oltmanns, and Turkheimer (2007) used thin slicing to predict individual's personality disorders and found that participants' ratings of personality disorders were reliable and correlated (above .50) accurately with the self-report and peer report of the individual's personality disorders. Additionally, Ambady and Krabbenhoft (2006) investigated the perception of salespeople through thin-slices of vocal channels, and how these thin slices can be used as accurate judgments of sales effectiveness and customer satisfaction. They found that judges were able to accurately distinguish highly effective sales managers from less effective sales managers strictly from 20-second audio clip thin slices of sales managers' interview sessions.

Thin slicing has also been used in business related interactions focusing on interviews as well as courtroom hearings. Schmidt (2012) analyzed whether strangers viewing twelve-second thin slices of employment interviews would conclude the same hiring recommendations as strangers who viewed the interview in its entirety. He found that individuals who viewed the twelve-second slices came to the same conclusion on hiring recommendations compared to individuals who viewed the complete interview. Similarly, Nagle and Brodsky (2012) examined a jury's decision-making process on an expert's credibility through thin-slices of an expert witness testimony. Their findings showed that jurors were able to accurately predict credibility ratings under the exposure of only a 30-second thin slice of the testimony.

Moreover, Benjamin and Sapiro (2006) examined the predictive accuracy of thin slices on the forecasts of gubernatorial elections. Their results showed that participants, naïve to the gubernatorial elections, who viewed ten-second silent thin slice clips of debates were able to

accurately predict the outcome of the election. Kraus and Keltner (2009) used the thin slice approach to study the non-verbal signaling of socioeconomic status (SES) through a get-acquainted interaction task. The participants in the study watched a 60-second slice from the five-minute interaction and were able to accurately identify individuals' high SES and low SES through their engagement and disengagement nonverbal cues shown during the slice. Visser and Matthews (2006) used thin slices to study complete strangers' ratings on predicting the job performance of call center employees. The stranger's ratings from thin slices were compared against managerial reviews and customer satisfaction reviews of the employee. They found that ratings from only 30-second silent and sound video clips of employee's job performance by a complete stranger correlated positively with managerial ratings and customer satisfaction ratings. Their results highlight thin slice's predictive accuracy for job performance ratings.

In investigating the viability of thin slices, Murphy et al. (2015) focused on the reliability and validity of thin slice use for observation of nonverbal behavior. They examined the necessary qualities a slice must have to be effective and accurately predict the phenomenon being studied. They assessed five standards for thin slice reliability and validity; slices' interchangeability, behavioral slices' representation of the whole, slice length, best slice across behaviors, and best represented behaviors by slices. They found that different slices from an interaction are interchangeable for predicting certain behaviors and that 30-second to one-minute slices, particularly from the middle of the interaction, adequately represented certain nonverbal behaviors. Finally, their results showed that the optimal slice length was between 1.5 and two minutes. They claimed that no one slice was superior to another, but suggested that slices from the very beginning of an interaction do not strongly identify the whole.

In sum, research reveals that the thin slice method is versatile in its practical application across various fields. As Ambady noted in 1999, "judgments of these critical social and clinical outcomes such as teacher effectiveness and sales effectiveness, interpersonal expectancies, and mental patient pathology can be made accurately from these brief observations" (p. 538). Correspondingly, thin slices assist organizations in the efficient utilization of time, proper training provision, and maintaining their organizational standards. Thin slice research provides this assistance by indicating that within brief moments the behavioral elements that organizations either aim to increase or decrease can be identified and addressed: effective selling behavior (Ambady, Krabeenhoft, & Hogan, 2006), professional negotiation tactics for desired outcome (Curhan and Pentland, 2007), and hireability conduct (Ruben et al., 2014). Most importantly, thin slice research has created a resourceful method for coding nonverbal behaviors and has proved effective in accurately predicting a phenomenon under brief durations of observations in various interaction types (Ambady & Rosenthal, 1992; Ambady & Rosenthal, 1997; Carcone et al., 2015; and Murphy, 2005).

It is evident that thin slice research studies have focused on the prediction of behavioral outcomes, personality characteristics, and impression formation in social, clinical, and organizational settings (Grossman, 2015; Houser, Horan, and Furler, 2007; Lambert, Mulder, & Fincham, 2014; McIntosh &Park, 2015; Richerson & Nicole Shelton, 2005; Tom, Tong, & Heese, 2010; and Tskhay, Xu, & Rule, 2014). Though the thin slicing research design has been used in various studies in relation to measuring specific behaviors, personality, and impressions, it has never been applied to measuring public speaking performance. Thus, the objective of this proposed study is to apply the thin slicing research design to public speaking assessment.

Particularly, this study will explore the use of thin slices in accurately judging and predicting

the quality of speeches presented in public speaking or oral communication college courses.

The proposed study aims to extend thin slice research and its practical application into

the communication education arena. It will focus on extending the thin-slice method to the

quality evaluation of oral communication in undergraduate college level public speaking

courses. The first hypothesis in this proposed study is that thin slices will accurately judge the

overall quality of a speech. The second hypothesis is that observation of a thin-slice qualifies as

a suitable substitute for whole-speech observation. The last hypothesis is that the ideal thin slice

for accurately predicting speech quality will be between 30-seconds and 1.5-minute in length.

The primary goal is to apply the study's findings in assisting universities with their

assessment efforts pertaining to the improvement of students' ability to speak proficiently.

Universities must demonstrate improvement throughout their assessment plan timeline and

must meet their plan's objectives to showcase their level of commitment and progress in

enhancing their student body's academic development. In order to meet these assessment plan

objectives, universities must be able to evaluate student performance and provide adequate

assistance as needed for proper intellectual development. Thus, communication centers and

their resources across universities are used to assist with these efforts to properly assess the

student body's current communication proficiency. Additionally, to conduct these evaluations

and provide communication center assistance, a university requires financial support. Research

has shown that state and federal support for state university funding is continuously decreasing

while tuition is rising (Heller, 2001). Therefore, if universities were able to identify a technique

that would assist in effectively completing certain objectives of their assessment plans, this

would prove financially beneficial for the institutions as well as educationally-beneficial for the student body.

A technique to optimize the fulfillment of a university's assessment efforts would prove valuable. Based on the findings of this proposed study ecological validity may be established for the use of the thin slice method in speech evaluation across campuses nationwide. In other words, if reviewers are able to accurately rate a speech through only its thin slice, this will reduce the time required to review and rate speeches. In turn, it will offer the opportunity to review more speeches, which will optimize the time needed for evaluation of the overall performance of the student body's speaking abilities at the university. Moreover, this optimization of speech evaluation time through the use of thin slices would reduce the funding necessary to acquire reviewers (heavily graduate students and adjunct professors) to evaluate speeches, which would free funds for the university to use for other areas related to their assessment efforts and overall intellectual development of the student body.

Methods

Participants and Reviewers

A convenience sample of 60 undergraduate students from a mid-sized Southern university will be asked to participate to review the speech stimuli. All reviewers will be randomly assigned to a thin slice duration category (15 reviewers per 30-second, 15 reviewers per 1-minute, and 15 reviewers per 1.5-minute) and the remaining 15 will be assigned to the full-length speech category. Reliability of reviewers' ratings in each category for the speech's overall quality will be calculated for all reviewers combined and for each individual judge (Ambady and Rosenthal, 1993).

Data Collection Procedures

Measures. A measure of the overall quality of the speech will be obtained using Thomas and Rucker's (2002) "Public Speaking Competency" instrument that uses a 5-point Likert scale across 20 items to assess speech quality (See Appendix). The overall quality score of the speech will be calculated as well as the five elements of speech: introduction, body, conclusion, delivery, and speech competency.

Items 1-20 measured the four predominant characteristics of speech competence. Items 1-3 asked the evaluator to rate elements of the introduction (Cronbach's alpha = .71). Items 4-8 asked the evaluator to rate elements of the body of the speech (Cronbach's alpha = .81). Items 9-12 asked the evaluator to rate elements of the conclusion of the speech (Cronbach's alpha = .85). Items 13-19 asked the evaluator to rate elements of delivery (Cronbach's alpha = .81). Item 20 asked the evaluator to provide a global assessment of the speaker's speech communication competence based on the speech as a whole. The 20-item public speaking competency scale yielded a Cronbach's alpha of .87 (Thomas and Rucker, 2002, p.23).

Stimulus materials. A student from a mid-sized Southern university, more specifically an undergraduate student enrolled in an introductory communication and public speaking course will be selected to participate in performing a speech for the study's stimulus development. A student enrolled in this course will be selected, in particular, because he or she will be given the opportunity to willingly participate in this research in exchange for extra credit directly towards

the grade on the speech performed in class. The student will perform his or her speech in a

controlled location.

The speech will be recorded using the proper technology to control for any variables

relating to environment and video characteristics. The speech presented by the participant will

not exceed 9-minutes in length. The speech will be recorded using a high-definition video

camera or iPad with a resolution of 1920 X 1080 pixels. Full-length videos will be edited using

iMovie software to create the speech's thin slices. A thin slice of each duration will be extracted

from the full-length speech: a 30-second, 1-minute, and 1.5-minute slice from the first three

minutes of the speech (0:00-3:00), a 30-second, 1-minute, and 1.5-minute slice from the middle

three minutes of the speech (3:00-6:00), and a 30-second, 1-minute, and 1.5-minute slice from the

last three minutes of the speech (6:00-9:00). The three clips of each thin slice duration will be

compiled in random order (to account for judge's memory effect) into one video and shown to

the judges. A total of 9 thin slice clips and 1 full-length video will be used for this study.

Procedures

Upon participants' arrival to the laboratory, the study will be explained to the participants and

those agreeing to participate will be asked to sign a consent form. Participants will be informed

that the study is interested in the process by which speech presentations are evaluated.

Participants will then be directed to a computer and instructed to watch their assigned videos

and rate them using the Public Speaking Competency Instrument (Thomson & Rucker, 2002).

Once participants have completed rating their video for quality, they will be thanked for their

participation and free to leave.

Data Analysis

To test our hypotheses, the proposed study will utilize a one-way analysis of variance (ANOVA) to determine whether there are any significant differences between the means of the three thin slice durations of the speech (30-second, 1-minute, and 1.5-minute slice) and the full-length speech. The independent measure in this design is the duration of each speech video. The dependent measure is the quality score given to the speech video. The aggregate means of judges' evaluations using the Public Speaking Competency Instrument (Thomson & Rucker, 2002) on the quality of the full-length speech will be used as the index for the overall speech quality score. This score will then be used to compare against the aggregate means of the quality scores from each thin slice category extracted from the full-length speech.

Results indicating no significance between the thin slices and the full speech would require a post hoc F-test to identify if any of the thin slices between one another show any significant differences.

These statistical analyses will produce answers to the following questions: first, can any of the three thin slices used accurately predict the quality of the speech? Second, is a specific thin-slice duration, between 30-second, 1-minute, and 1.5-minute, superior in accurately predicting the overall quality of whole speech? Third, is a speech thin slice a significant substitute for judging speech quality compared to viewing the speech in its entirety? Finally, based on the findings, can speech thin slicing be used as an assessment technique for Quality Enhancement Plans (QEP) enacted by universities accredited by the SouthernAssociation of Colleges and Schools (SACS) and other speech-focused academic enhancement efforts?

Discussion

The descriptive statistics of this study will be the mean and standard deviation of the four

speech durations and the full-length speech. Based on previous literature the results could show

no significant differences between thin slice and full-speech ratings of speech quality. These

findings would indicate that thin slices are an accurate predictor of speech quality and a

suitable substitute for speech evaluation compared to viewing a speech in its entirety.

Additionally, if no significant differences were found between the three thin slices during the

post hoc F-test this would highlight that any slice of at least 30-seconds in length would qualify

for speech evaluation. If differences were found between the three slices it would identify one of

the three thin slices as a superior choice for evaluating the quality of a speech. For example, if

no initial significant differences are found and a post hoc test identifies differences between the

30second slice and the remaining two slices then evaluations of speeches could be conducted

under 30-second slices instead of viewing the entire speech

Under the circumstance that no significant differences are found between the thin slices

and the full speech, then academic institutions would be able to modify their means of

evaluating speeches presented in public speaking, oral communication college courses to

include the use of the thin slice method. Since the thin slice method would provide an accurate

platform for rating a speech it would reduce the time required to review and rate speeches.

Moreover, it would offer the opportunity to review more speeches. This opportunity would

allow for a prompt tally of the overall performance of the student body's speaking abilities and

in turn grant universities a superior and more efficient method for completing the objectives of

their assessment plans. The optimization of evaluation time through the use of thin slices will also allow universities to reduce the overall funding required for hiring reviewers and designate the freed funds for distribution across other areas of intellectual development per assessment plan requirements.

Future Direction

If the hypotheses of this proposed study are supported, it would extend thin slice research beyond the prediction of only behavioral outcomes, personality characteristics, and impression formation in social, clinical, and organizational settings. This study would highlight the effectiveness of thin slice use for quality speech evaluation in assessment for higher education institutions. Based on the results, future research could evaluate the effectiveness of slices that are shorter in duration than the 30-second slice length used for this study. Previous literature speaks to the human ability of impression formation in extremely brief exposures to a phenomenon. Thus, future research could extend this study's methodology and support the idea that speech thin slices as short as 2-seconds could be used to effectively evaluate the quality of a speech. These future research findings could tremendously enhance the means by which academic institutions evaluate speech proficiency through observation of speech performance under brief exposure of speech thin slices.

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Appendix

PUBLIC SPEAKING COMPETENCY INSTRUMENT

NAME _____   EVALUATOR _____

Circle one of the sets of numbers before each numbered question based on whether that statement is excellent (5), good (4), average (3), fair (2), or poor (1).

1. The speech begins with a strong attention-getter	5	4	3	2	1
2. The purpose of the speech is clear in the introduction.	5	4	3	2	1
3. I can identify the speech introduction.	5	4	3	2	1
4. I can identify the main points in the speech body.	5	4	3	2	1
5. The pattern of organization is clear in the body.	5	4	3	2	1
6. Supporting material in the body of the speech is adequate.	5	4	3	2	1
7. Supporting material in the body of the speech adds interest to the speech.	5	4	3	2	1
8. Supporting material in body of the speech aids my understanding of the topic.	5	4	3	2	1
9. I can identify the speech conclusion.	5	4	3	2	1
10. I can identify the purpose in the speech conclusion.	5	4	3	2	1
11. I can identify a review of the main points in the conclusion.	5	4	3	2	1
12. The closing of the speech is strong.	5	4	3	2	1
13. The speaker's pace/speed makes the speech understandable.	5	4	3	2	1
14. The speaker's volume makes the speech understandable.	5	4	3	2	1
15. The speaker's behavior (i.e., gestures) is smooth.	5	4	3	2	1
16. The speaker's eye contact adds to the speech effect.	5	4	3	2	1
17. The speaker is relaxed and comfortable when speaking.	5	4	3	2	1
18. The speaker uses her/his voice expressively.	5	4	3	2	1
19. The speaker uses his/her body expressively.	5	4	3	2	1
20. The speaker is a competent communicator.	5	4	3	2	1

Part I: Total Score: _____