# Exploring Impacts of Arts Education through Inductive Application of Rhetorical Structure Theory

Seth Corrigan, University of California-Irvine, scorrig1@uci.edu
Maggie Dahn, University of California-Irvine, dahnm@uci.edu
Phebe Chew, University of California-Irvine, pfchew@uci.edu
Sara Trapp, University of Kentucky, saratrapp2@gmail.com
Daniela DiGiacomo, University of Kentucky, daniela.digiacomo@uky.edu
Sam Mejias, Parsons School of Design at The New School, mejiass@newschool.edu
Julian Sefton-Green, Deakin University, julian.seftongreen@deakin.edu.au
Kylie Peppler, University of California-Irvine, kpeppler@uci.edu

**Abstract:** Research into the outcomes of youth arts programs and arts participation in general has tended to focus on particular dimensions such as mental health, job readiness, and community development. This article describes development and deployment of a codebook for flexible, inductive coding that aids identification of outcomes interviewees attributed to their participation in out-of-school arts programs, regardless of the dimension. The corpus used to develop the codebook is derived from semi-structured retrospective interviews with 102 international participants discussing their past experiences in the arts. The resulting codebook specifies criteria for recognizing outcome statements, and heavily relies on the rhetorical structure and lexical content of speech. By specifying properties of speech that are characteristic of outcome descriptions in general, the codebook supports inductive exploration of outcomes that were described by participants but may be overlooked or unavailable in public discourse about out–of-school or community based youth arts programming.

## Introduction

There have been significant efforts to identify and document the benefits of arts learning and participation within the broader educational research field and also more specifically within the learning sciences (e.g., Halverson, 2013; Halverson & Sawyer, 2022). A majority of those efforts have focused on documentation of the impacts of arts learning and participation along a single dimension or small number of dimensions, such as benefits for academic achievement (Guhn et al., 2020; Jindal-Snape, 2018), student engagement (Walker et al., 2011), mental health and wellness (Kosma et al., 2020; Stuckey & Nobel, 2010), executive functioning (Holochwost et al., 2017), confidence (Simpson Steele, 2019), social relationships (Dadswell et al., 2020), community building and connection (Catterall, 2009; Catterall et al., 2012; Stevenson & Deasy, 2005), and occupational outcomes (Betts, 2006), among others. Less prevalent are studies such as those from Matarasso (1997), and Merli, (2003) who have taken a more general approach, aiming to identify outcomes across a larger number of dimensions, though even these stay within a single general category that could broadly be considered social impacts.

The purpose of the current paper is to present a *flexible* and *inductive* approach to identifying outcomes in interviewee speech that is agnostic to the dimension or type of outcome being described. We present the approach as being "flexible" for two reasons. First, it is agnostic to the outcome type or dimension, meaning that it does not privilege a set of themes or preconceived outcomes associated with arts participation—rather, it relies on the structure of participants' talk to identify utterances that convey one or more outcomes. Second, although the approach is applied here as a means to investigate arts outcomes, the process is portable to other domains as well. In this paper we give special focus to the codebook development effort as the primary means for coders to reliably identify participants' outcome statements with reference primarily to the rhetorical structure and lexicon of the participants' speech.

The inductive approach taken here is a natural fit for efforts to gather the broadest possible set of outcomes from participants' interviews. Generally, inductive methods include a range of processes for reading and interpreting text to then develop concepts, themes or a model to aid subsequent interpretation of that same data (Boyatzis, 1998; Corbin & Strauss, 1990). In that sense, inductive methods may be thought of as being "data first," relying on forms of inductive reasoning to surface important themes, topics, and models from the data itself without preconceived notions or limitations on the number or types of outcomes to be found. Our inductive approach employs rhetorical structure theory (Mann & Thompson, 1988) to specify the discourse structures and lexicon of participant utterances that attribute one or more outcomes to the speaker's out-of-school arts participation. All utterances carrying the specified rhetorical structures, are coded without regard for the

dimension, or type of impact. As a result, use of the codebook provides researchers an opportunity to gather a more complete universe or constellation of outcomes, potentially expanding discourse around outcomes that may be important, but not currently prevalent. The resulting set of outcomes is primarily delimited only by the characteristics of the participants sampled, their contexts, and the ability of the coders to reliably employ the coding scheme.

The target audience for the paper includes at least three groups. First, we presume the work will be of interest to stakeholders in arts education in general, and those interested in out-of-school arts programs. In particular, we expect the ideas behind the codebook and the coding approach itself will be useful where these stakeholders are interested in identifying a more complete universe of impacts of their programs, beyond what existing interview protocols or survey instruments may currently capture. Further, the work is expected to be relevant to education researchers and evaluators utilizing inductive qualitative methods as well as those interested in leveraging rhetorical structure theory in qualitative studies. Lastly, we hope the work will be useful to those in the learning sciences who are interested in identifying and understanding outcomes and processes associated with arts learning – particularly where those outcomes and processes fall outside of concerns informing current public discourses around the arts and arts education.

## Background: Rhetorical Structure Theory as a basis for identifying outcome statements

A description of rhetorical structure theory (RST) was first published by Mann and Thompson (1988). Briefly, the theory posits that coherent texts have a structure that can be characterized by rhetorical relations, also referred to as discourse relations, between two or more spans of text (Marcu, 2000). In the context of RST, a span of text can be characterized as either the nucleus, the core part of a message, or a satellite which is secondary and supports the message in the nucleus in some way. The set of common rhetorical relations between nuclei and satellites provide a convenient way to characterize text. Examples of such rhetorical relations include the 'EVIDENCE' relation, the 'JUSTIFY' relation, 'ELABORATION', and the 'SOLUTIONHOOD' relation, among many others. In the case of the EVIDENCE example, a satellite within an utterance serves to provide evidence for an adjoining nucleus which advances the speaker's claim. Figure 1 provides a graphic display of a general RST schema, and identifies the nucleus, the satellite, and the rhetorical relation in a sample sentence.

**Figure 1**
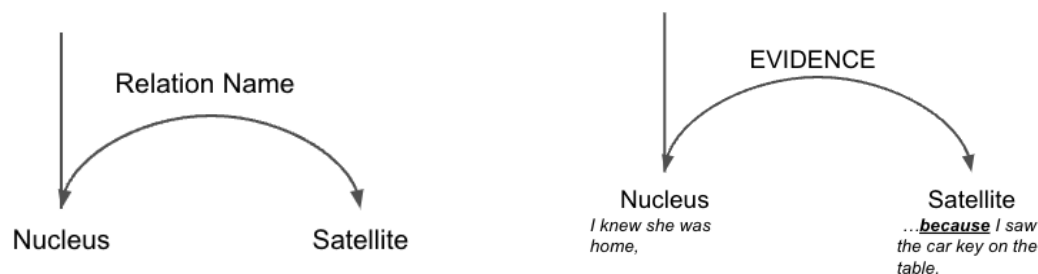*A Generic RST Schema and Sample EVIDENCE Schema*



Figure 1 also highlights the rhetorical marker, 'because', used by the speaker to explicitly indicate, or evoke, the 'EVIDENCE' relation. Rhetorical markers are terms or phrases that represent relations between different discursive segments (Khany, Aliakbari, Mohammadi, 2019). They can be explicit, present in the text in the form of a connective term or phrase on the page. But they can also be implicit when the term or phrase is absent from the text but may be inferred on the basis of convention or something said or written earlier in the text. When the connective is absent, the discourse relation must be inferred and it can be more difficult to identify the intention of the speaker (Pitler et al., 2009). A significant portion of the project's codebook specifies the rhetorical relations of interest and the rhetorical markers that tend to accompany them.

Several categories of rhetorical relations may be more prevalent when speakers are relaying an association between speakers' arts practice or program participation and a given outcome or result. Relations such as 'CAUSE', 'RESULT, and 'SOLUTIONHOOD', for example, may be typical relations to evoke when the speaker intends to attribute one or more benefits or outcomes to one's participation. As suggested in the example given in Table 1 for instance, it also takes little work to infer that intent when they claim or suggest that one experience was the *cause* or *result* of another.

**Table 1**
*Sample Utterance Using a Rhetorical Marker that Makes the Nucleus-satellite Relation Explicit*

| Component | Speech |
|---|---|
| Full Utterance | "I was already managing, you know, taking care of the studio at [arts program] … umm, ***so*** I was able to show the record company I had some experience already." |
| Speech Segment 1 | "I was already managing … the studio at [arts program]" |
| Observed Discourse Marker | 'RESULT': "...*so*..." |
| Speech Segment 2 | "I was able to show the record company I had some experience…" |

Other categories of rhetorical relations may have a less prevalent role in talk relaying associations between one's arts participation and outcomes. Examples of such relations include 'BACKGROUND' for instance, when the purpose of a speech segment is to provide information that makes it easier to understand the nucleus, or 'CONDITION' when a speaker relays the realization of one event or outcome was dependent in some way on another event as exemplified in Table 2. Interlocutors may be less likely to encounter these relations, and when speakers use them, the intent may be more difficult to infer.

**Table 2**
*An Example of How the 'CONDITION' Relation may be Used*

| Component | Speech |
|---|---|
| Full Utterance | "People will think they're unimaginative ***unless*** they have chances like we did to try out new ideas." |
| Speech Segment 1 | "People will think they're unimaginative…" |
| Observed Discourse Marker | 'CONDITION'': "*unless*..." |
| Speech Segment 2 | "they have chances like we did …" |

## Data and methods for codebook development

The corpus of data used for this work consists of 102 semi structured interviews, carried out with adults from Australia, the United Kingdom, and the United States who had participated in one or more out-of-school arts programs as children or youth. The interviews were conducted between 2020 and 2023, and designed to last approximately 60 to 90 minutes, with some taking place in person and others online.

All interviews were subsequently transcribed by an external transcription service. Names of the interview participants were programmatically replaced with unique identifiers, and the text was organized into spreadsheets with each row representing a sentence as indicated by the presence of end punctuation. Each row of talk was indexed by the row number, the interview code, and the speaker code. A subset of the data representing a diverse selection of countries of origin and arts domains were selected for development of the codebook. Individual utterances of interviewers were coded. Sentences were demarcated via end punctuation as produced by the contracted transcription service.

Development of the codebook followed an iterative process that is consistent with best practices for codebook development (MacQueen et al., 1998; MacQueen et al., 2008; Weston et al., 2001; Richards & Hemphill, 2018). Codebook development began with the coding team explicitly specifying and documenting the goals of the coding effort and delimiting what was meant by an outcome of arts practice or participation in an arts

program. Using a comprehensive list of discourse relations (Mann & Thompson, 1988), the team of coders then reviewed and independently coded a small subset of the corpus data. For each instance of a positive code, the team members documented their rationale as well as the identified nucleus, satellite, and any rhetorical markers when present. Coders deliberated over disagreements. These discussions resulted in one or more coding rules logged in the code book. The resulting coding rules were iterated as needed when subsequent disagreements arose.

Corpus coding began after development of the codebook and once an acceptable level of inter-rater reliability (>0.75) had been achieved. Because the coding team regularly achieved high levels of agreement, >90%, Gwet's AC1 (Gwet, 2008) was used to estimate inter-rater reliability. Levels of agreement were estimated regularly throughout the coding process.

## Results: Criteria for inductive discovery of outcomes

The work reported here utilizes a subset of 24,227 rows of the corpus which were coded by a minimum of two coders. Inter-rater reliability for the resulting data was high with a percent agreement of 94.25% and an estimated Gwet's AC1 of 0.9345. A total of 2,770 rows (11.4%) contained one or more outcome statements .

The agreed upon coding goal that led the team throughout the process was as follows: "Identify all instances of speech where participants attribute or associate one or more outcomes, impacts/results (including any benefit, harm, change, persistence/consistency) or experiences (of their own) to an arts program, their arts participation or any related endeavors occurring any time in the past or present."

The resulting code book establishes three sets of criteria for recognizing speech that describes or indicates one or more outcomes. Briefly, these are: 1) outcome statements that explicitly utilize rhetorical relations to indicate an association between an outcome and an arts program or experience, by presenting a rhetorical marker that relates the nucleus and satellite of the utterance; 2) outcome statements that indicate a rhetorical relation between an outcome and an arts program or experience, but do not explicitly use a rhetorical marker; and 3) outcome statements that include descriptions of the speaker's experience in their arts practice or program where an outcome is understood to be implied when coders can reasonably infer a relation between the experience or program and the outcome. Each set of criteria is described in more detail below. Examples are provided for each category.

### Criteria - Explicit rhetorical relations

Utterances presenting explicit rhetorical relations were present when an utterance presented an identifiable nucleus and satellite that were accompanied by one or more relevant rhetorical markers. Instances of outcome statements carrying explicit rhetorical relations arose when speakers were not only conveying an outcome but also explicitly associating that outcome with their arts experience and/or their arts program through use of a rhetorical marker. Examples of outcome statements using explicit rhetorical relations are wide ranging.

Relying on a classification system for rhetorical relations created by Mann and Thompson (1988), the coding team identified over twenty types of rhetorical relations that could potentially be used to make a connection between one's arts participation or program, and an outcome. Examples 1 and 2, present two such explicit cases - each one presenting a nucleus and satellite that are brought into relation through the rhetorical markers *'so'* and *'unless'*, respectively. Additional examples of rhetorical relations include mention of an aspect of arts or program participation as a 'PRECONDITION' for an outcome, a 'CIRCUMSTANCE' that facilitated an outcome, the 'MEANS' for an outcome, or a 'SOLUTION' to a particular problem, among many others.

### Criteria - Implicit rhetorical relations

The second category of outcome statements also utilizes rhetorical relations to convey the outcome and its association with an arts program or participation, but does so *without* explicit use of a rhetorical marker. Without an explicit rhetorical relation, listeners infer the intent of the speaker by inferring the rhetorical relation between two or more spans of talk (Haller, 1993). This is consistent with early descriptions of rhetorical structure theory (Mann and Thompson, 1988) in which it was recognized that interlocutors infer the meaning of talk either by attending to (when it is present) or supplying (when it is absent) the rhetorical relation between one utterance and another. It is also consistent with the established notion of 'communicative intent' - the conviction that speakers participating in dialogue have a message that they intend to convey, and they relay sufficient information for listeners to infer that intent (Austin, 1962; Grice, 1969; Grosz and Sidner, 1986; Haller, 1993).

**Table 3**

*An Example of an Implicit Rhetorical Relation*

| Component | Speech |
|---|---|
| Full Utterance | "I was there on most days, around the studios and one day [instructor] asked if I could go with him …" |
| Speech Segment 1 | "I was there on most days, around the studios…" |
| Discourse Marker | 'CIRCUMSTANCE Inferred' |
| Speech Segment 2 | "and one day [instructor] asked if I could go with him …" |

In Table 3, for instance, the speaker does not provide an explicit marker indicating how the satellite ("I was there on most days…") relates to the nucleus ("and one day [instructor] asked if I could go with him…"). Instead, the listener is left to infer how the two parts of the utterance are related outside of the fact that they were sequenced in time. One way to systematically do that, is by inferring one or more possible rhetorical relations. In this case, the coder has indicated 'CIRCUMSTANCE Inferred' as a possibility, expecting that the speaker used the satellite to establish the circumstance that in turn led to the opportunity to travel and work with their arts mentor.

## Criteria - Experiences and program descriptions

The third group of criteria are applied to utterances where alumni provide a description of their past arts experiences or describe their arts program(s) in ways that provide information about one or more outcomes. This category of outcomes may include only a nucleus, without an accompanying satellite. As a result, it may not be possible to infer the communicative intent of the speaker via rhetorical relations.

In general, lone descriptive statements tend to point to more proximal outcomes, outcomes that occurred in the course of the program or immediately after. The speakers' inferred communicative intention is to describe an experience or aspect of their program. In doing so however, their talk can indicate an outcome. For example, a description of the equipment a participant worked with in their program's darkroom or recording studio, can point to *access to equipment or resources* granted through their participation. Likewise, descriptions of attentive instructors giving personalized feedback or attention, or one's roles or internships while at a program may point to *support and opportunities* that can be associated with the speakers' participation.

As summarized in Table 4, these types of descriptions can focus on either internal experiences, shared experiences, or a property or aspect of the program itself. Descriptions of internal experiences relay aspects of the speaker's experience that are not directly accessible by others. They include descriptions of affective, cognitive, volitional, and perceptual experiences. Descriptions of an affective experience typically relay an emotion felt by the speaker. By contrast, descriptions of cognitive experiences relay something the speaker remembered thinking, believing, or learning. Volitional experiences relayed information about the speakers' desires, aspirations or motivations and potentially, how these changed during their arts participation or program. Descriptions of perceptual experiences, indicated something the speaker perceived in their arts practice or program environment, the people involved, or the objects present.

Descriptions of shared experiences on the other hand, are descriptions of experiences that multiple people could have directly accessed or observed. Others beside the speaker could have observed and/or corroborated the claims these descriptions entail. These utterances include descriptions of the people that were present, the physical environment, as well as the activities, processes and movements or activities the speaker was engaged in. They can also include mentions of and/or descriptions of the roles and responsibilities one has/had.

**Table 4**
*Types of Descriptions Providing Information about Outcomes*

| Category | Subcategory | Example |
|---|---|---|
| Internal | Affective | *"I felt at home there."* |
| | Cognitive | *"I learned how to read music."* |
| | Volitional | *"I started to have big expectations for myself."* |
| | Perceptual | *"They were creatives just like me."* |
| Shared | People present | *"The instructors gave us personalized attention."* |
| | Environment | *"I was in the darkroom there, developing my film and my photos."* |
| | Actions and roles | *"I was responsible for the engineering rooms, had to, to keep them clean, make sure everything was working, basically IT tech."* |
| Program description | NA | *"... [the program] was offering me, uh, free film, free paper, like, you know, book materials, uh, and free dark room access…"* |

Program descriptions include statements about an arts organization, general comments about an arts program or more specific comments about aspects of an arts program. Speakers present program descriptions as factual claims about the organization or program. As a result, these types of statements do not explicitly entail perspective taking in the same way internal experiences of the perceptual type do.

## Conclusion

The purpose of this paper has been to present a *flexible* and *inductive* approach to reliably identifying outcomes in participants' speech. The approach relies heavily on the rhetorical structure and lexical content of utterances, guiding coders to identify outcomes regardless of the type of outcome the speech entails. As a result, the approach is agnostic to the dimension or type of outcome being described. It is also expected that the approach can be applied in any program area, educational programs or others.

Because the methodological approach focuses on the rhetorical structure and lexical content of participants' speech, it allows coders to gather a potentially broader universe of outcomes reported by participants than more deductive approaches that begin with a predetermined set of categories or types of outcomes. This affords several additional benefits. First, it allows for discovery of specific novel outcomes, and even novel classes of outcomes that may not be part of the generally available current discourse within a domain or field. Second, it permits participants in the given program to themselves serve as the primary source of information about outcomes associated with a given program or a set of experiences, thus supporting movement toward more culturally relevant and connected frameworks for explaining and assessing out-of-school learning experiences—in this case, in the arts. Third, it opens the possibility of collecting and specifying a more complete universe of outcomes within a given field or area of practice than what may be available to stakeholders using a more deductive approach.

While the coding approach presented here is expected to be generalizable to other fields and domains, development of the approach in the context of youth arts experiences and programs has led to a number of potential contributions in particular. The coding approach was initially developed as a first step in developing an inclusive taxonomy of outcomes associated with participation in the arts. As stated in the introduction, above, work in this area has tended to focus on one or a small number of categories of outcomes. The codebook and the larger project in which it is embedded affords an opportunity to gather a potentially large universe of outcomes derived from

participants themselves that cuts across existing categories, and stands to introduce categories of outcomes not broadly recognized in current discussions around the impact of informal arts education on young people, especially young people from minoritized communities.

## References

Austin, J. L. (1962). How To Do Things With Words (ed. J. O. Urmson). Cambridge, MA: Harvard University Press.

Betts, J. D. (2006). Multimedia arts learning in an activity system: New literacies for at risk children. *International Journal of Education & the Arts*, *7*(7).

Boyatzis, R. E. (1998). *Transforming qualitative information: Thematic analysis and code development*. Sage.

Catterall, J. S. (2009). *Doing well and doing good by doing art*. Imagination Group/I-Group Books.

Catterall, J. S., Dumais, S. A., & Hampden-Thompson, G. (2012). *The arts and achievement in at-risk youth: Findings from four longitudinal studies*. National Endowment for the Arts.

Dadswell, A., Bungay, H., Wilson, C., & Munn-Giddings, C. (2020). The impact of participatory arts in promoting social relationships for older people within care homes. *Perspectives in Public Health*, *140*(5), 286-293.

Grice, H. P. (1969). Utterer's meaning and intention. *The Philosophical Review*, *78*(2), 147-177.

Grosz, B. J., & Sidner, C. L. (1986). Attention, intentions, and the structure of discourse. *Computational Linguistics*, *12*(3), 175-204.

Guhn, M., Emerson, S. D., & Gouzouasis, P. (2020). A population-level analysis of associations between school music participation and academic achievement. *Journal of Educational Psychology*, *112*(2), 308–328. https://doi.org/10.1037/edu0000376.

Haller, S. (1993). Planning for Intentions with Rhetorical Relations. In *Intentionality and Structure in Discourse Relations*.

Halverson, E. R. (2013). Digital art making as a representational process. *Journal of the Learning Sciences*, *22*(1), 121-162.

Halverson, E., & Sawyer, K. (2022). Learning in and through the arts. *Journal of the Learning Sciences*, *31*(1), 1-13.

Holochwost, S. J., Propper, C. B., Wolf, D. P., Willoughby, M. T., Fisher, K. R., Kolacz, J., Volpe, V. V., & Jaffee, S. R. (2017). Music education, academic achievement, and executive functions. *Psychology of Aesthetics, Creativity, and the Arts*, *11*(2), 147–166. https://doi.org/10.1037/aca0000112

Jindal-Snape, D., Davies, D., Scott, R., Robb, A., Murray, C., & Harkins, C. (2018). Impact of arts participation on children's achievement: A systematic literature review. *Thinking Skills and Creativity*, *29*, 59–70. https://doi.org/10.1016/j.tsc.2018.06.003

Khany, R., Aliakbari, M., & Mohammadi, S. (2019). A model of rhetorical markers competence in writing academic research articles: a qualitative meta-synthesis. *Asian-Pacific Journal of Second and Foreign Language Education*, *4*, 1-19.

Kosma, M., Erickson, N., Savoie, C. J., & Gibson, M. (2020). The effectiveness of performative aerial practice on mental health and the love of movement. *Research in Dance Education*, 1–18. https://doi.org/10.1080/14647893.2020.1784868

MacQueen, K. M., McLellan, E., Kay, K., & Milstein, B. (1998). Codebook development for team-based qualitative analysis. *Cam Journal*, *10*(2), 31-36.

MacQueen, K. M., McLellan-Lemal, E., Bartholow, K., & Milstein, B. (2008). Team-based codebook development: Structure, process, and agreement. *Handbook for Team-Based Qualitative Research*, *119*, 119-135.

Mann, W. C., & Thompson, S. A. (1988). Rhetorical structure theory: Toward a functional theory of text organization. *Text-interdisciplinary Journal for the Study of Discourse*, *8*(3), 243-281.

Marcu, D. (2000). Extending a formal and computational model of rhetorical structure theory with intentional structures la Grosz and Sidner. In *COLING 2000 Volume 1: The 18th International Conference on Computational Linguistics*.

Matarasso, F. (1997). Use or ornament. *The social impact of participation in the arts*, *4*(2), 34-41.

Merli, P. (2002). Evaluating the social impact of participation in arts activities. *International Journal of Cultural Policy*, *8*(1), 107-118.

Pitler, E., Louis, A., & Nenkova, A. (2009). Automatic sense prediction for implicit discourse relations in text.

Richards, K. A. R., & Hemphill, M. A. (2018). A practical guide to collaborative qualitative data analysis. *Journal of Teaching in Physical Education*, *37*(2), 225-231.

Simpson Steele, J.S. (2019). Where are they now? Graduates of an arts integration elementary school reflect on art, school, self and others. *International Journal of Education and the Arts*, 20. https://doi.org/10.26209/ijea20n11

Stevenson, L. M., & Deasy, R. (2005). *Third space: When learning matters*. Arts Education Partnership. Strauss, A., & Corbin, J. (1990). *Basics of Qualitative Research*. Sage publications.

Stuckey. H.L., & Nobel, L. (2010). The connection between art, healing, and public health: A review of current literature. *American Journal of Public Health*, *100*(2), 254–263. PubMed. https://doi.org/10.2105/AJPH.2008.156497

Walker, E., Tabone, C., & Weltsek, G. (2011). When achievement data meet drama and arts integration L*anguage Arts*, *88*(5), 365.

Weston, C., Gandell, T., Beauchamp, J., McAlpine, L., Wiseman, C., & Beauchamp, C. (2001). Analyzing interview data: The development and evolution of a coding system. *Qualitative Sociology*, *24*, 381-400.

## Acknowledgments