Text Analysis within Quantitative and Qualitative Psychotherapy Process Research: Introduction to Special Issue

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Abstract. The present paper introduces the special issue on Text Analysis in Quantitative and Qualitative Psychotherapy Process Research. The motivation for this special issue grew out of recognition of the following: (1) both quantitative and qualitative psychotherapy process research (PPR) make extensive use of text analysis (TA); (2) TA presents different characteristics that serve different aims in quantitative and qualitative PPR; and (3) researchers are not always fully aware of these differences in explicit and systematic ways. The present paper, together with the special issue it introduces, aims at stimulating a more explicit and systematic methodological reflection on the different ways in which TA may be used in quantitative and qualitative PPR. We first outline the general differences between TA in quantitative and qualitative PPR; then, we describe the extent to which the papers in this special issue illustrate these differences. Finally, we conclude by stressing that PPR may significantly benefit from researchers becoming more fully aware of the differences.

Keywords: psychotherapy process research, text analysis, quantitative methods, qualitative methods

Psychotherapy Process Research (PPR) consists of the scientific investigation of in-therapy processes and can be performed by means of both quantitative and qualitative research approaches (Elliott, 2010; Hill & Lambert, 2004; Lutz & Hill, 2009; Manzo, 2010; Orlinsky, Rønnestad, & Willutzki, 2004; Rice & Greenberg, 1984; see also Gelo, Auletta, & Braakmann, 2010; Gennaro, Venuleo, Auletta, & Salvatore, 2012; for mixed-methods research combining quantitative and qualitative methods, see Hanson, Creswell, Plano Clark, Petska, & Creswell, 2005; see also Gelo, Braakmann, & Benetka, 2008, 2009). This type of research heavily relies on textual material (Greenberg & Pinsof, 1986; Lepper & Riding, 2005), which is defined here as any material having a linguistic and, eventually, a paralinguistic structure. Such material is, in fact, considered to (potentially) carry a substantial amount of meaningful information about the psychotherapeutic process and is usually derived from either therapeutic sessions or ad-hoc interviews, which are usually audio or video recorded and, in most cases, transcribed.

Text analysis (TA) is used to analyze this textual material. TA may be very generally defined as *any set of procedures of inquiry of a text used to draw meaningful information from it with regard to its explicit and/or implicit content, organization, and/or structure.*[1] Within PPR, TA may be approached in several ways and serve different aims, especially in quantitative versus qualitative PPR. Although researchers may (intuitively) acknowledge these differences, they are not always fully aware of them in a systematic and explicit way.

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[1] The term "content analysis" may be used to refer to both the manifest and latent content of a text (Mayring, 2000) or, alternatively, only to the manifest content (Berelson, 1952). Moreover, note that there is a tendency to associate the term with a (post)positivistic approach to TA (see Silverman, 2011).

In a time of "methodological flexibility and systematic pluralism" (Elliott, 1999, p. 252; see also Slife & Gantt, 1999), this lack of awareness may prevent PPR from developing. This paper, together with the special issue it introduces, is a contribution intended to stimulate a methodological reflection on the differences in TA in quantitative and qualitative PPR. We begin by outlining the general differences in TA in quantitative and qualitative PPR, with reference to some specific features; then, we describe the extent to which the papers in this special issue illustrate these differences.

Quantitative vs. qualitative PPR and TA

Quantitative and qualitative PPR are the two main approaches to the empirical investigation of the psychotherapeutic process (Hill & Lambert, 2004; Lutz & Hill, 2009; see also Timulak, 2008). Both require procedures for systematically collecting and analyzing empirical data (i.e., information) on in-therapy processes. However, they differ with regard to several issues. At a pragmatic and procedural level (i.e., the research methods), the main difference between them involves the *nature* (i.e., the symbolic format) of the data that they rely upon to answer the research questions. Quantitative PPR primarily makes use of *numerical* data, which are analyzed by means of statistical analysis, while qualitative PPR makes use of non-numerical *languaged* (Polkinghorne, 2005, p. 317) data, which are analyzed using meaning-based forms of data analysis (Elliott, 1999; Hill & Lambert, 2004; Lutz & Hill, 2009).[2] It is due to these differences that TA presents different characteristics and serves different aims in quantitative and qualitative PPR. These differences are summarized in Table 1.

Within quantitative PPR, TA is used to *collect data* in a numerical format. This is the case when quantitative *observational* data collection instruments are applied by raters to audio/video recordings or transcripts of therapy sessions (see Mergenthaler & Stinson, 1992); in some minor cases, ad-hoc interviews are also used as sources of material (for an overview, see Barker, Pistrang, & Elliott, 2002; Greenberg & Pinsof, 1986; Lepper & Riding, 2005).[3]

Examples of quantitative observational instruments are category systems (e.g. the Core Conflict-ual Relationship Theme [Luborsky et al., 1994], the Verbal Response Modes [Elliott et al., 1987], the Collaborative Interactions Scale [Colli & Lingiardi, 2007, 2009]), rating scales (e.g. the Defense Mechanism Rating Scale [Perry, 1990], the Comparative Psychotherapy Process Scale [Hilsenroth, Blagys, Ackerman, Bonge, & Blais, 2005], the Assimilation of Problematic Experiences Scale [Stiles et al., 1990]), Q-sort techniques (e.g. the Psychotherapy Process Q-Sort [Ablon, Levy, & Smith-Hansen, 2011; Jones, 2000; Lingiardi, Bonalume, Colli, Gentile, & Tanzilli, 2011]), and other types of coding systems (e.g. the Adult Attachment Interview [Main, Hesse, & Goldwyn, 2008]).[4] These and some other examples of observational instruments used in quantitative PPR are reported in Table 1.

These instruments allow for the assessment of the investigated text with regard to a limited set of previously defined theoretical constructs (i.e., relational patterns, response modes, defenses, metacognitive functions, etc.), thus adopting a *theory-driven* approach to TA. Thus, each of these instruments specifies both the construct (i.e., category) assessed in the text (e.g., different relational patterns, defenses, etc.) and the textual characteristic that may indicate the presence of the construct. The TA involved in the application of these instruments is mainly focused on the speech *content*, although some other aspects of *textual organization* (e.g., speech coherence) may be considered (e.g., in the case of the AAI). The categories are explicitly defined, usually in a manual, and text passages prototypical of those categories are provided as examples to "guide" the rater in the application of the instrument. Then, the eventual presence of a construct in the text is coded by the rater on a dichotomous, nominal, or Likert scale.

Finally, specific procedures of inter-rater reliability are applied, in which codings by different raters are compared by numerically calculating the degree of agreement among them (Hill & Lambert, 2004). This type of TA represents a standardized version of what has been described as *deductive content analysis* (Elo & Kyngäs, 2008; Mayring, 2000; see also Berelson, 1952). The ratings provided by the raters will constitute the numerical data that will be then used in the statistical analysis to answer the research questions of the study (see Pokorny, Gelo, & Moertl, in prep.; see the special issue of Lutz & Lambert, 2009, for some examples of the most recent

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[2] Actually, the difference between quantitative and qualitative approaches in psychotherapy research goes beyond the *research methods*; it also involves the *methodological principles* underlining these methods and the *worldviews* grounding them. We direct the reader to Ponterotto (2005) for a more general discussion of these issues in the field of psychotherapy research (see also Gelo, 2012 and Polkhingorne, 1983, for a similar discussion regarding the general social sciences).

[3] Another main way to collect numerical data in quantitative PPR is through the use of quantitative self-reports, in which subjects directly provide their responses by rating items on a scale (e.g., the Working Alliance Inventory [Horvath & Greenberg, 1989], Session Reports [Orlinsky & Howard, 1986]).

[4] Strictly speaking, attachment as assessed by the Adult Attachment Interview (AAI) is more of an input or output variable than a process variable (see Orlinsky et al., 2004). However, considering the relevance that attachment may have for the therapeutic process (e.g., Steele, Steele, & Murphy, 2009), we decided to consider the AAI as an instrument ascribable to (quantitative) PPR.

Table 1. Some common features distinguishing between TA in quantitative and qualitative PPR

Feature	TA in quantitative PPR	TA in qualitative PPR
Scope	Data collection	Data analysis
Focus and examples of methods	*Speech content*	*Participants' subjective experiences*
	Core Conflictual Relationship Themes (Luborsky et al., 1994)[a]	Grounded Theory Analysis (Glaser & Strauss, 1967; Strauss & Corbin, 1998)
	Verbal Response Modes (Elliott et al., 1987)[a]	Phenomenological Analysis (Giorgi, 2009; Smith, 1996)
	Structural Analysis of Social behavior (Benjamin et al., 2006)[a]	Narrative Analysis (Avdi & Georgaca, 2007a)
	Generic Change Indicators (Krause et al., 2007)[a]	Biographical Analysis (Riemann & Schuetze, 1991)
	Innovative Moments Coding System (Gonçalves et al., 2009)[a]	Consensual Qualitative Research (Hill et al., 1997)
	Dynamic Mapping of the Structures of Content (Salvatore et al., 2012)[a]	Thematic Analysis (Braun & Clarke, 2006)
	Therapeutic Activity Coding System (Valdés et al., 2010)[a]	Inductive Content Analysis (Mayring, 2000)
	Narrative Process Coding system (Angus et al., 1999)[a]	
	Grid of the Models of Interpretation (Auletta et al., 2012)[a]	*Pragmatics, functions or structure of language-in-use*
	Assessment of Interpersonal Motivation in Transcripts (Fassone et al., 2012)[a]	Conversation Analysis (Madill, 2001)
	Defense Mechanisms Rating Scale (Perry, 1990)[b]	Discourse Analysis (Avdi & Georgaca, 2007b)
	Metacognition Assessment Scale (Semerari et al., 2003)[b]	*Clinical processes*
	Comparative Psychotherapy Process Scale (Hilsenroth et al., 2005)[b]	Task Analysis (discovery phase) (Greenberg, 2007)
	Comprehensive Psychotherapy Intervention Rating Scale (Trijsburg et al., 2002)[b]	Comprehensive Process Analysis (Elliott, 1989)
	Motivational Areas Rating Scale (Sarracino & Dazzi, 2007)	Assimilation Analysis (Stiles et al., 1992)
	Collaborative Interactions Scale (Colli & Lingiardi, 2009)[b]	Metaphor Analysis (Buchholz, 1993)
	Referential Activity (Bucci et al., 1992)[b]	
	Assimilation of Problematic Experiences Scale (Stiles et al., 1990)[b]	
	Psychotherapy Process Q-Sort (2000)[c]	
	Adult Attachment Interview (Main et al., 2008)[d]	
	Speech organization	
	Assessment of Interpersonal Motivation in Transcripts (Fassone et al., 2012)[a]	
	Adult Attachment Interview (Main et al., 2008)[d]	
Strategy of analysis	Theory-driven, top-down	Data-driven/theory-informed, cyclical
Logical operations involved	Deduction	Eduction, abduction, induction, deduction
Type and amount of categories worked with	Preset, limited	Emergent, variable
Quality criteria	Inter-rater reliability (Cohen's *K*, ICC)[d]	Demonstrative rhetoric (use of examples)
		Consensus (group discussion, peer review, audit, debriefing)
Prototypical reference	Deductive content analysis	Methodical hermeneutics

Note. TA = text analysis. PPR = psychotherapy process research. ICC = intra-class correlation.
[a] Category system. [b] Rating scale. [c] Q-sort technique. [d] Coding system.

advancements).[5]

On the other hand, in qualitative PPR, TA represents the core of the *data analysis* process that is necessary for answering the research questions of the study. In fact, in this type of PPR, data are already collected in a languaged format by recording therapy sessions (see Mergenthaler & Stinson, 1992; Sack, Schegloff, & Jefferson, 1974) and/or through ad-hoc interviews (see Knox & Burkard, 2009). In some cases, audio/video assisted recall procedures are used in combination with interviews, as in Interpersonal Process Recall (IPR; Elliott, 1986; for an overview, see Barker et al., 2002; Blasi, 2010; Elliott, Slatick, & Urman, 2001). Three main types of TA may be used within qualitative PPR (see Rennie, 2012; for an overview, see Frommer & Rennie, 2001; Madill & Gough, 2008; Mcleod, 2011; Moertl, Gelo, & Pokorny, in prep.): *experiential* TA, which focuses on the subjective experiences of the participants; *discursive* TA, focusing on the pragmatics, functions or structure of the language-in-use; and *experiential/discursive* TA, entailing focus on either the experience or the discourse with the aim of a clinically meaningful analysis of one or more cases. Examples of experiential TA are Grounded Theory Analysis (Glaser & Strauss, 1967; Strauss & Corbin, 1998), Descriptive and Interpretative Phenomenological Analysis (Giorgi, 2009; Smith, 1996), Narrative Analysis (Avdi & Georgaca, 2007a; McLeod & Balmoutsou, 2006), Biographical Analysis (Riemann & Schuetze, 1991),[6] Consensual Qualitative Research methods (Hill, Thompson, & Williams, 1997) and, to some extent, Inductive Content Analysis (Elo & Kyngäs, 2008; Mayring, 2000) and Thematic Analysis (Braun & Clarke, 2006).[7] Examples of discursive TA are Conversation Analysis (Lepper, 2000; Madill, 2001; Peräkylä, Antaki, Vehviläinen, & Leudar, 2008) and Discourse Analysis (Avdi & Georgaca, 2007b). Examples of experiential/discursive TA are the discovery phase of Task Analysis (Greenberg, 2007), Comprehensive Process Analysis (Elliott, 1989), Assimilation Analysis (Stiles, Meshot, Anderson, &

Sloan, 1992)[8] and Systematic Metaphor Analysis (Buchholz, 1993; Schmitt, 2005; for a slightly different approach, see Gelo & Mergenthaler, 2012).

The interpretation required to conduct this type of TA goes far beyond what is required to deductively apply a standardized set of categories to a text, as in the case in quantitative PPR. In fact, TA used in qualitative PPR involve a much deeper and more thorough *cyclical interaction* between the analyzer and the text (see hermeneutic circle; Dilthey, 1996). Within this process, eduction (Rennie, 2012) and abduction (Haig, 2005, 2008; Salvatore & Valsiner, 2010) cyclically interact with induction and deduction, and a variable number of *emergent* patterns of experience, language use, or clinically significant processes may be identified within the text under analysis. Finally, the trustworthiness or credibility of the analysis (see Elliott, Fischer, & Rennie, 1999; Nutt, Williams, & Morrow, 2009) is, in many cases, demonstrated rhetorically (Rennie, 2012). That is, the researcher conducting the TA grounds his or her arguments for the identification of specific textual patterns (of experience, language use, or clinical process) on the discussion of typical examples that are persuasive. In some other cases, a greater emphasis may be placed upon intersubjective interpretative agreement, which is achieved by means of group discussions and, eventually, external audits, peer reviews, and debriefing. The features of TA found in qualitative PPR are consistent with what Rennie (2012) calls *methodical hermeneutics*.

TA in quantitative PPR: Narrative processes, innovative moments, communicative intentions, and attachment

The first four contributions of this special issue illustrate quantitative approaches to PPR making use of TA; the commonalities and the differences between them are summarized in Table 2. Each of these papers is characterized by a specific topic. Angus et al. (2012) review the application of the Narrative Process Coding System (NPCS) to emotion-focused therapy for depression and show how this allowed investigating the relationship between different narrative modalities, in-session process variables, and treatment outcomes. Cunha, Spínola, and Gonçalves (2012) make use of the Innovative Moments Coding System (IMCS) to assess, in both good and poor outcome cases of narrative therapy for depression, different types of Innovative Moments (IMs), as well as different modalities of their emergence. Associations between these variables and differences in the two cases are analyzed. Dagnino, Krause, Pérez, Valdés, and Tomicic (2012) apply the Therapeutic Activity Coding System (TACS) to assess different types of clients' and therapists' communicative intentions during change

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[5] Computer-assisted TA procedures may also be used to collect numerical data within quantitative PPR (e.g., the Therapeutic Cycle Model [Mergenthaler, 1996, 2008], the Referential Activity [Bucci & Maskit, 2006; Mergenthaler & Bucci, 1999], and the Automated Co-occurrence Analysis for Semantic Mapping [Salvatore, Gennaro, Auletta, Tonti, & Nitti, 2011]). Although these procedures may share some of the features of TA described so far, they present high degrees of specificity. For this reason, we decided to exclude them from consideration in this special issue.

[6] The biography of a subject is not necessarily related to treatment in-session processes. However, considering the potential mutual interconnections that can occur between a life trajectory and in-session processes, we decided to consider Biographical Analysis a method ascribable to (qualitative) PPR.

[7] Unlike Rennie (2012), we consider Thematic Analysis an experiential type of TA. However, we acknowledge that the subjective experience that can be depicted and reconstructed through Thematic Analysis is rather superficial compared to other experiential methods.

[8] Assimilation Analysis is usually used to identify the client's *voices* as a preliminary step to the application of the APES (Osatuke & Stiles, 2011).

Table 2. Summary of features of special issue articles

Article	Topic	Data collection	Data analysis	Method of TA	Focus of TA	Strategy of TA	Logical operations involved	Type and amount of categories	Quality criteria of TA
Angus et al. (2012)[a]	Overview of NPCS	Sessions (video recording)+TA	Statistics (regression analyses)	NPCS	Narrative processes	Theory-driven, top-down	Deduction	Preset; 3[b]	Cohen's K
Cuhna et al. (2012)[a]	Application of IMCS	Sessions (transcription)+TA	Statistics (Chi-squared)	IMCS	Emergence of IMs	Theory-driven, top-down	Deduction	Preset; 5+3[c]	Cohen's K
Dagnino et al. (2012)[a]	Application of TACS	Sessions (transcription)+TA	Statistics (logistic regression analysis)	TACS	Communicative intentions during change processes	Theory-driven, top-down	Deduction	Preset; 3[d]	Cohen's K
Kriss et al. (2012)[a]	Overview of FFI	FFI Interview (transcription)	Not used	FFI scoring system		Theory-driven, top-down	Deduction	Preset; 3+4[e]	Cohen's K, ICC
Dourdouma & Mörtl (2012)[f]	Overview of Grounded Theory Analysis	Change Interview (transcription)	TA	Grounded Theory Analysis	Experience of therapeutic change	Data-driven/theory-informed, cyclical	Eduction, abduction, deduction, induction	Emergent; 1[g,h]	Discussion with supervisor
Heine et al. (2012)[f]	Application of Biographical Analysis	Autobiographical Narrative Interview (transcription)	TA	Biographical analysis	Trajectory of suffering	Data-driven/theory-informed, cyclical	Eduction, abduction, deduction, induction	Emergent; 6[g,i]	Peer review
Muntigl et al. (2012)[f]	Overview of Conversation Analysis	Sessions (transcription)	TA	Conversation analysis	Linguistic and paralinguistic realizations of attitudinal stance and affiliation	Data-driven/theory-informed, cyclical	Eduction, abduction, deduction, induction	Emergent; 3[g,l]	Demonstrative rhetoric

Note. TA = textual analysis. NPCS = Narrative Process Coding System. IMCS = Innovative Moments Coding System. IM = Innovative moment. TACS = Therapeutic Activity Coding System. FFI = Friends and Family Interview.

[a] Quantitative approach to psychotherapy process research. [b] 1) "External narrative processes", 2) "Internal narrative processes", and 3) "Reflexive narrative processes". [c] 1) "Action IMs", 2) "Reflection IMs", 3) "Protest IMs", 4) "Reconceptualization IMs", and 5) "Performing change IMs"; 1) "IMs produced by the therapist", 2) "IMs prompted by the therapist", and 3) "IMs produced by the client". [d] 1) "Exploring", 2) "Attuning", and 3) "Resignifying". [e] 1) "Internal working models", 2) "Reflective functioning", and 3) "Coherence"; 1) "Secure attachment", 2) "Dismissive attachment", 3) "Preoccupied attachment", and 4) "Disorganized attachment". [f] Qualitative approach to psychotherapy process research. [g] In this kind of TA, the amount of categories involved in the analysis varies across the different steps involved in the analysis. Here we indicate the amount of categories representing the final step (results) of the analysis. [h] "The experience of therapeutic change, under the secure frame of therapy, is a process of deconstructing and reconstructing the house you live in: Yourself". [i] 1) "Personal meaningful nourishments", 2) "Challenging experience with significant others", 3) "Courage to persevere", 4) "Family support", 5) "Dramatic family events", and 6) "Dreams". [l] 1) "Scripting experience", 2) "Stories of agency and positive affect", and 3) "Client disaffiliation: achieving re-affiliation with a contrasting stance".

episodes in psychotherapies with different orientations. Differences between clients' and therapists' communicative intentions, as well as their temporal courses, are analyzed. Finally, Kriss, Steele, and Steele (2012) introduce the Family and Friends Interview (FFI), which represents both a semi-structured interview protocol to collect attachment-relevant information and a rating system assessing attachment in middle and late childhood. The authors describe the theoretical background of the FFI and the methodology of rating.

Notwithstanding these differences, these four papers share many commonalities. They all use TA in their quantitative *data collection*, which is performed either by means of a category system (NPCS, IMCS, or TACS) applied to the audio recordings (Angus et al., 2012) or transcripts (Cunha et al., 2012; Dagnino et al., 2012) of sessions or by means of a rating scale (FFI) applied to transcripts of ad-hoc interviews (Kriss at al., 2012). The data collected in this way are then analyzed, using either parametric or nonparametric statistics, to answer the research questions addressed in each paper. The only exception is the paper by Kriss et al. (2012), which focused on the theoretical background and rating procedure of the FFI without reference to the statistics that might be used with the scores obtained from the application of the instrument (for the application of statistics to relate attachment-relevant variables to in-process variables, see, for example, Saypol & Farber, 2010).

Moreover, all of the instruments presented or applied in these four contributions follow a *theory-driven*, top-down approach to TA, which consists, in the *deductive* application of a previously defined and limited number of categories to be rated on nominal (Angus et al., 2012; Cuhna et al., 2012; Dagnino et al., 2012) and/or Likert (Kriss et al., 2012) scale(s). Finally, the reliability of the TA is assessed using numerical coefficients. In the case of nominal ratings (such as on the NPCS, IMCS, TACS, and part of the FFI), Cohen's (1960) kappa is used (Angus et al., 2012; Cuhna et al., 2012; Dagnino et al., 2012; Kriss et al., 2012), while the intra-class correlation coefficient (Shrout & Fleiss, 1979) is used for Likert scale ratings (as on part of the FFI; Kriss et al., 2012).

TA in qualitative PPR: Experience of therapeutic change, trajectories of suffering, and attitudinal stance and affiliation

The last three contributions of this special issue illustrate TA employed in qualitative PPR. Table 2 summarizes the commonalities and the differences among them. Each of these papers is characterized by a specific topic. Dourdouma and Mörtl (2012) provide a methodological overview of Grounded Theory Analysis, along with a set of guidelines for its application; concrete examples are given, with reference to the investigation of the experience of change in clients who have undergone systemic family therapy. Heine, Schütze, Köhler, and Frommer (2012) make use of Biographical Analysis to investigate the trajectory of suffering among leukemia

survivors and identify different modalities of coping with it. Finally, Muntigl, Knight, Horvath, and Watkins (2012) provide an overview of one specific approach to Conversation Analysis for the investigation of client attitudinal stance and therapist-client affiliation. Excerpts from couples therapy and from one individual therapy case with a depressed client are analyzed to provide examples of the application of this method.

Notwithstanding these differences, these three papers share many commonalities that clearly distinguish them from those presented in the previous section. First of all, TA here represents the procedure of *data analysis*, which is necessary to answer the research questions of each study; the languaged data are collected by transcribing ad-hoc interviews (Dourdouma & Mörtl, 2012; Heine et al., 2012) or therapy sessions (Muntigl et al., 2012).

Moreover, all of the different methodologies presented or applied in these three contributions follow a *data-driven/theory-informed* approach to TA, in which eduction, abduction, deduction, and induction interact differently with each other. This allows the researcher(s) to identify variable numbers of emergent patterns regarding clients' experiences of therapeutic change (Dourdouma & Mörtl, 2012), autobiographical trajectories of suffering and the related coping strategies (Heine et al., 2012), and/or linguistic and paralinguistic realizations of attitudinal stance and affiliation (Muntigl, 2012). Finally, the credibility of the analyses is supported, whether by means of regular discussions with a supervisor (Dourdouma & Mörtl, 2012) or research team (Heine et al., 2012) or by means of demonstrative rhetoric (Muntigl et al., 2012).

Conclusion

To investigate in-session psychotherapeutic processes, both quantitative and qualitative PPR make extensive use of TA. Taken together, the papers reviewed in this special issue display the extent to which TA may be differently used in each of these two empirical approaches to PPR. We believe that being explicitly and systematically aware of these differences can significantly contribute to the further development of methodological flexibility and pluralism and that PPR will benefit from such awareness. In agreement with Lutz and Hill (2009, p. 372), we hope that this special issue will stimulate not only better PPR by means of TA but also more research on TA itself.

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