# Research on the relationship between language and emotion

## A descriptive overview

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The basic relationship between language and emotion is more and more present in research over the last decades. This chapter presents the field of research in a historical and current overview to open up new perspectives for future research. For this purpose, the authors analyse 500 studies on language and emotion published over the last hundred years. Furthermore, the sub-study analysis examines the methodology of 50 empirical studies on language acquisition in detail. Results hint at disciplinary differences in the choice of methods and subjects. There is a lack of subjects with deviant developmental states and in at-risk lifeworlds. This overview illustrates the necessity of approaches which deal in a complex way with both sides of the relationship between emotion and language.

**Keywords:** language and emotion, emotional turn, overview, state of the art

### 1. Evidence of the "emotional turn"

In this chapter, research over the last hundred years on the relationship between language and emotion is examined in detail. Over the past few years the theoretical work on this relationship is growing (for example, in linguistics: Wierzbicka 2009; Foolen 2012; in pedagogical and therapeutic approaches in speech and language: Lüdtke 2012; Kamp-Becker et al. 2013; as well as in clinical research especially in the field of *specific language impairment*: e.g. St. Clair et al. 2011; Brinton et al. 2010; Brinton et al. 2011). Firstly, Le Doux has spoken of this shifting research interest in different disciplines as an "emotional turn" (e.g. Le Doux 2000). But the actual evidence of this trend has not been examined in detail.

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## 2. Research question and aim

A widespread and detailed inquiry seems inevitable against the background of a paradigm shift in linguistics and psychology, which turns from an exclusive cognitive approach to the consideration of the emotional domain, in order to concentrate approaches and emphases for getting new and gainful perspectives for future research.

To reach this aim, this chapter explores the following crucial questions:

1. What is the state-of-the-art research on the general relationship between language and emotion? How does this field develop historically?
2. What is the methodology of empirical studies over the last 30 years, which examine the relationship between language development and emotion? How do they proceed?
3. Which theoretical desiderata could be recognized in both fields that could be used for conceptualizing new studies?

## 3. Method

To answer these three connected questions the studies were examined in a descriptive review. The approach focuses on the creation of a systematic overview of the state-of-the-art research and does not focus on a systematic comparison of effects. It is a qualitative approach in which studies are categorized and compared by criteria.

The research on the relationship between language and emotion (question 1) was examined in the main study with a sample of 500 studies. In a more detailed examination, 50 studies were chosen from the main sample and analysed. This smaller sample consists of research studies on communication and language development out of different disciplines (question 2).

### 3.1 Basic research design

The main study sample includes 449 studies. The search was carried out using combined keywords in German, English and French. It was desirable but impossible to collect all existing data concerning this broad field and the mass of publications available. The source of information in this main study was therefore collected abstracts and the introductions of these studies.

In the second step the sample of 50 communication and language development studies was chosen out of the larger sample using the criterion "language dimension."[1] The full text versions were the source of information in the sub-study.

1. The criterion "language dimension" includes amongst others the modalities of language such as "language production" or "language reception" or age-related dimensions such as "language acquisition."

## 3.2 Criteria selection

The criteria used for the systematic analysis of both the main- and sub-study are divided into six criteria-groups (see Table 1).

**Table 1.** Overview of criteria groups and criteria selection (dark grey sections: main study; light grey sections: sub-study)

| General aspects | Object of study 'Emotion' | Object of study 'Language' | Hypothesis and aim | Subject | Methodological procedure |
|---|---|---|---|---|---|
| Year of publication | Mode of emotional states | Dimensions of language | Research question | Age | Setting |
| Authors' sex | Terminology | Linguistic levels and codes | Affirmation of effects | Birth order | Focus of communication |
| Authors' language | Theoretical frameworks (explicit definition) | Mode of communication | | Development in general | Applied methods |
| Abstract | Operationalization of 'emotion' | | | Development at birth | Stimuli |
| Discipline | Basic Emotional Systems (BES, Panksepp 2011) | | | Socioeconomic status | Type of recording |
| Size and duration | | | | Ethnical and migration backgrounds | |
| Type (theoretical, empirical, case-study) | | | | | |

### 3.2.1 *Main study criteria*

The inquiry includes three criteria-groups forming the criteria for the examination of the main study (see Table 1). First of all, the item *General Aspects* concerns information such as year of publication, first author's gender, author's native language, discipline as well as size and duration of the study. Besides these general aspects, two items concern the topics *Emotion* and *Language*. Both items analyse the theoretical positioning of these studies. Within the topic *Emotion* the mode of the emotional state is gathered (e.g. for answering the question about whether the study has focused on the expression or on the reception of emotion). To answer the questions about the underlying construct of emotion the terminology (What term is used?) and the theoretical frameworks (Which approach is pursued?) are collected within these emotion criteria. Furthermore the way the studies deal with emotion is collected as part of the criterion "Operationalization of Emotion." For example it was analysed whether the studies categorize emotion as basic emotions in the way Ekman did with his six basic emotions

(see Ekman 1992) or if they categorize emotions like background emotions, shifting from one state to another in a similar way to the vitality contours of Stern (2000). The concept of basic emotional systems according to Panksepp is consulted to analyse the treatment of emotion as a construct (see Panksepp 2010). Panksepp (2010) claims seven basic emotional systems (Seeking, Fear, Rage, Lust, Panic, Play and Care). Out of these basic systems, which correspond to the latest neurobiological and anatomic research, emotions such as Joy, Love and Jealousy emerge. These emotions are also conducted with this criterion.

Concerning the item *Language*, the dimension of the examined language was collected among others (e.g. the question "Did they focus on reception, production, usage or on development?"). Another criterion examines the linguistic levels and codes (e.g. phonetics/phonology, semantics, syntax, pragmatics, prosody, semiotics, etc.). In this item the mode of communication is also collected (for example, verbal, nonverbal and paraverbal).

### 3.2.2 *Sub-study criteria*

All criteria named in the last section were also applied in the smaller sample of research studies on communication and language development. Furthermore, three more items were used to analyse the methodology of research on communication and language development in detail (see Table 1).

One item deals with the topic of the *Research Question*. The criterion "Hypotheses and Aim" clusters the studies into different topics such as Infant Directed Speech (IDS), Internal State Language (ISL), protoconversation, the relationship between IDS and ISL, the comorbidity of the pathology of speech and language and emotional development (e.g. Rescorla et al. 2007, who examined the relationship between specific language impairment and socio-emotional problems in toddlers), the reception of verbal emotion (e.g. in the study of Camras and Allision 1985, who showed differences in the reception of verbal and mimetic expressed emotions), as well as the relationship between emotional expression and language development (e.g. Bloom et al. 2001, who researched the relationship between speech and language development and the simultaneity of mimetic expression and word production). These clusters were developed out of the research questions in the sub-study sample. Beyond this the "Effects" in order to declare hypotheses were collected.

Another item focuses on the *Subject* of the studies. In this item information about "Age," "Order of Birth," "States of Development in General and At Birth," and "Socio-Economic Status" as well as "Ethnical and Migration Background" are collected. The last item concerns the *Methodological Procedure*. For this the "Setting" of the assessment (e.g. in a laboratory vs. in vivo; eliciting vs. natural), the "Focus of Communication" (e.g. mother, infant and reciprocity), the "Applied Methods" (e.g. analysis of interactional structure, tests, questionnaire, etc.) the used "Stimuli" (e.g. video or audio recording; objects such as toys or food, etc.) as well as the "Type of Recording" (e.g. digital vs. analogue; audio-visual, visual or audio) were analysed.

## 4. Results

The following sections present, in brief, the collected results from both parts of this examination. Firstly, selected results from the main study are presented. Secondly, the results concerning the methodology of the communication and language development studies are shown.

### 4.1 Results of the main study

In this section the results of the main study are presented in order to give an overview of historical and disciplinary development as well as the examined linguistic levels and codes.

#### 4.1.1 *Historical development from the beginning to now*

Looking at the start of research into this relationship, the results show that Darwin in 1872 was the first author publishing in this area with his book *The expression of the emotions in man and animals* (Darwin 1872). Two studies were published before the 1970s (Schachter and Singer 1962). Two per cent of the sample was published between 1970 and 1979. There was an increase in the number of studies published in the 1980s (up to 9.1% of the sample). Interest in the topic rose again in the 1990s, with up to 23.8% studies published. Nearly two-thirds of the studies from the sample (64.4%) were published in the years between 2000 and 2010 (see Figure 1, n = 449).

#### 4.1.2 *Changes in disciplinary research interests since 1970*

Connecting the results on the historical development of this research with the disciplinary bias forms an interesting picture, as presented in Figure 2. Developmental Psychology, the Psychology of Emotion, Linguistics and Psycholinguistics were the first disciplines in the 1970s to be involved in this area. In this sample, Psycholinguistics was the largest group with a percentage of 55.6% (n = 9). In the 1980s new disciplinary fields joined this group: Speech and Language Pathology (SLP) and Neuroscience, each of which have a percentage of 2.4%. Besides Developmental Psychology, Linguistics and the Psychology of Emotion each have a percentage of 12.2%, and the field of Psycholinguistics has the largest amount during this time with 41.5%. In the years between 1990 and 1999 the number of studies from Speech and Language Pathology rose to a percentage of 12.1%. Psycholinguistic studies fell to 25%, but still this discipline produced the largest amount overall. This relationship remains in the twenty-first century. In both timespans the disciplinary field continues to grow. Between 2000 and 2010, 25.6% of published studies are from different disciplines but are presented in this sample with a small percentage of less than 1%.

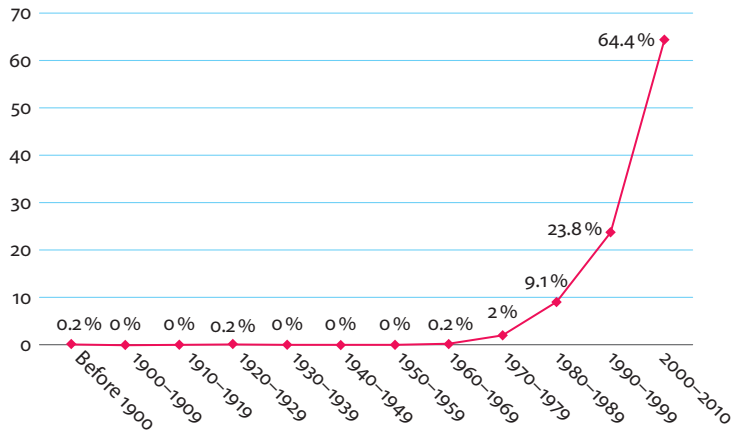


**Figure 1.** Quantity of scientific publications on the relationship between language and emotion

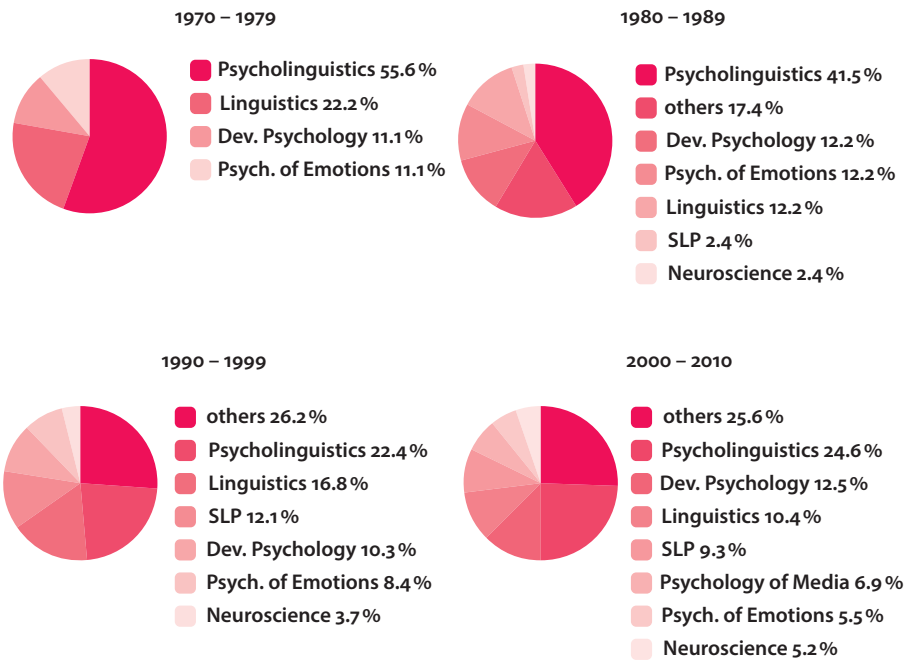


**Figure 2.** The percentage of disciplines in the research field of language and emotion since 1970

### 4.1.3 *Research on linguistic levels and codes*

With regard to the item *Language* and the criterion "Linguistic Levels and Codes" in particular, the results show that most of the studies inquire into the pragmatic (33.2%) and the semantic level (33.0%). Furthermore, prosody is examined in 18.7% of cases. In some studies language is not specifically examined to the linguistic level. Thus, studies conduct research on language in 17.8% of cases and on language acquisition in 6.0% in a general way. Studies which take syntactic aspects into account are recognizable in 7.1% of cases. The consideration of bilingualism occurs in 9.6% of cases. Phonetics and phonology (2.7%), semiotics (2.2%) and literary language (3.1%) have the smallest percentages of this sample (see Figure 3, n = 449).

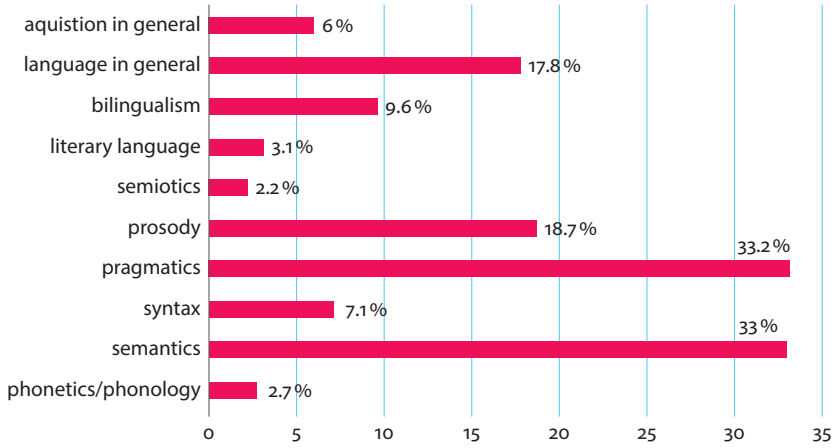


**Figure 3.** The percentage of linguistic levels and codes in the main study

### 4.1.4 *Focused linguistic levels and codes by certain disciplines*

When connecting different disciplines with the results on linguistic levels and codes, concentration on specific levels and codes becomes visible. Developmental Psychology (43.3%; n = 76) and Psychology of Emotion (33.3%; n = 36) analyse the pragmatic level most frequently. Linguistics and Psycholinguistics concentrate on the semantic level in 44.7% (n = 76) and 30.2% (n = 179) of studies, respectively. Neuroscience focuses on prosody in 28.0% of studies. Studies on Speech and Language Pathology (40.1%) examine language in a general way (see Figure 4).

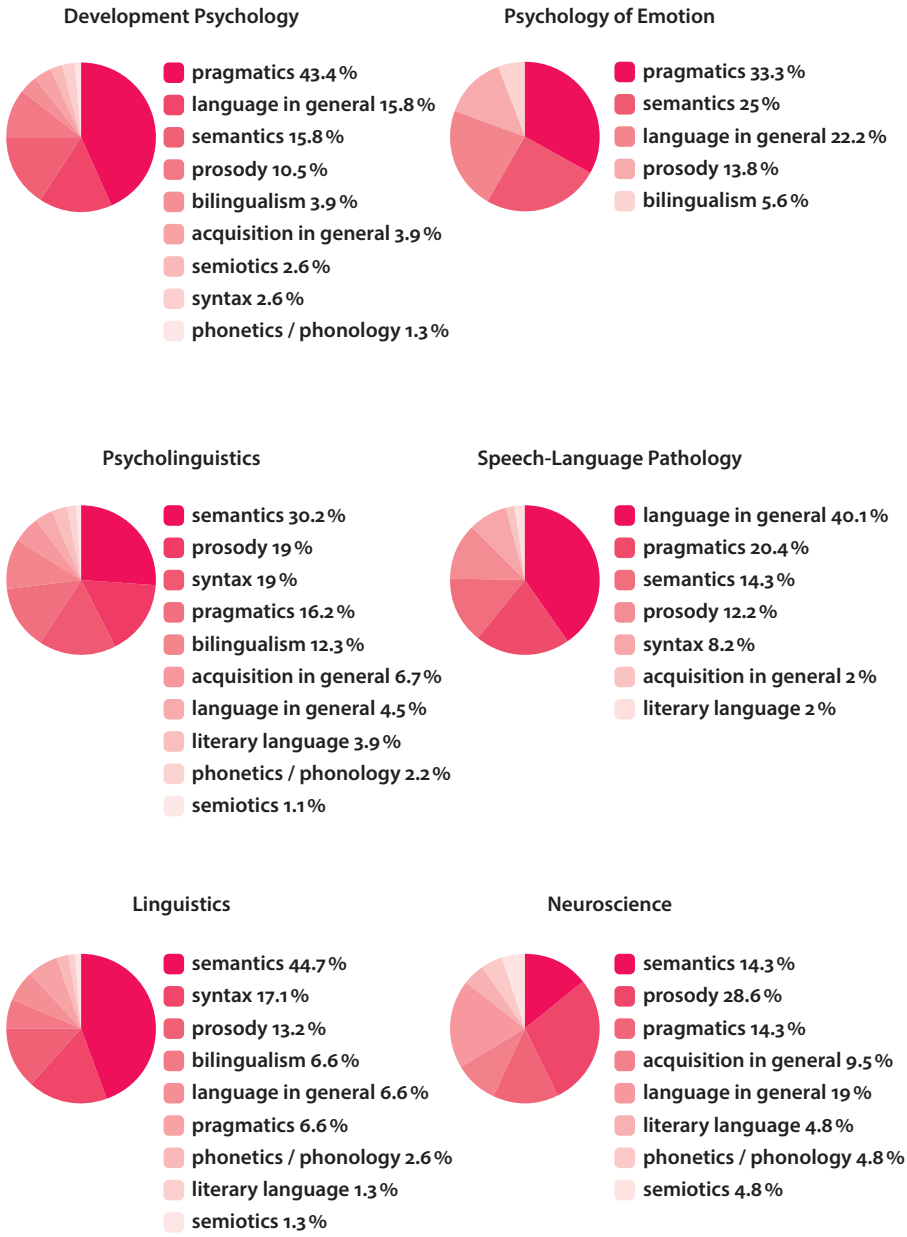


**Figure 4.** The percentage of linguistic levels and codes in selected disciplines

## 4.2 Results of the sub-study

In this section the results of the sub-study (n = 50) are presented to give an overview of the methodological proceedings in the field of communication and language development.

### 4.2.1 *Changes in the thematic research question since 1970*

Looking at the historical changes with regard to thematic topics shows that this kind of research begins in the 1970s (n = 1) with a question on protoconversation. In the eighties five of the seven clusters were already issues in research (n = 7). During this timeframe studies are respectively concerned with ISL, IDS, the relationship between IDS and ISL, the reception of verbal emotions and protoconversation. Most of these topics remain between 1990 and 1999 except those dealing with the reception of verbal emotion (n = 14). On the other hand studies exploring the comorbidity of social and language impairments were conducted during this time. After 2000 the relationship between IDS and ISL is observable at a percentage of 39.3% (n = 28). Topics such as comorbidity and protoconversation have a percentage of 21.4% while studies concerning IDS fall to 10.7% (see Figure 5).

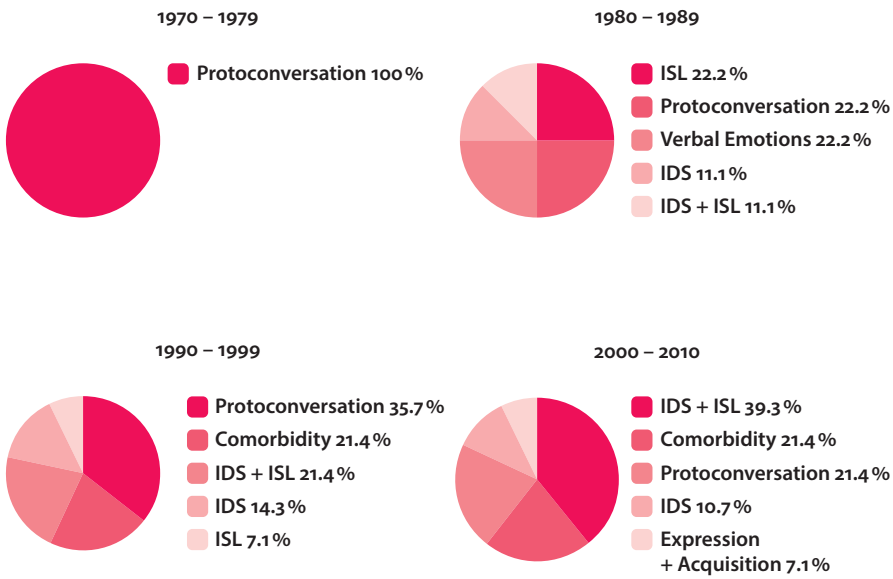


**Figure 5.** The percentage of thematic research questions since 1970

### 4.2.2 *Duration and the thematic research question*

Most of these studies on communication and language development (58.0%) apply a cross-sectional design. Longitudinal studies exist in this sample with a percentage of 40.0%. Just one study from Greenfield (1972) was a case study (see Figure 6).

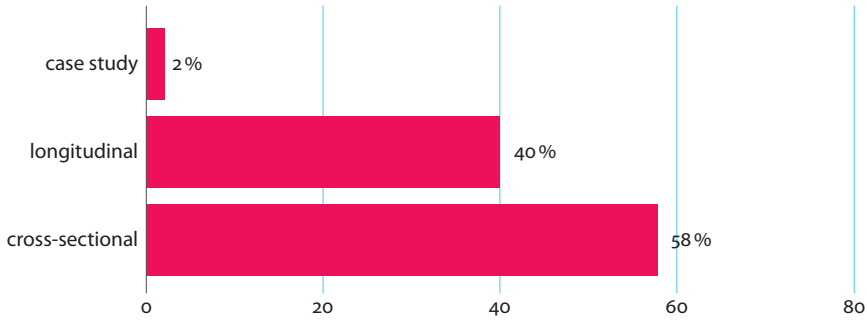


**Figure 6.** Duration of studies

Furthermore these results can be differentiated by connecting them with the clustered research questions. Five of these seven clusters show a cross-sectional design in at least 50.0% of cases. In particular, studies concerning IDS (83.1%; n = 6) and comorbidity of pathologies (66.7%; n = 9) are designed cross-sectionally. Protoconversation and also the relationship between IDS and ISL are examined both ways, longitudinally and cross-sectionally. Two-thirds of the ISL studies (66.7%; n = 3) and inquiries into the relationship between emotional expression and language acquisition are longitudinal studies (100%; n = 2). The case study investigates the topic of protoconversation (see Figure 7).

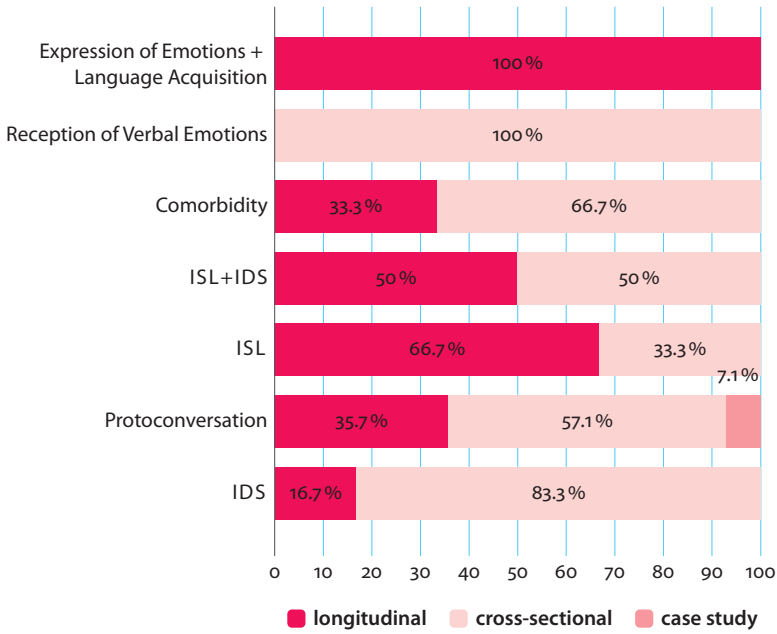


**Figure 7.** Duration of studies in relation to the thematic research question

### 4.2.3 *Explicit reference to a framework of emotion theory*

Looking closer at the criteria-group emotion and especially at the explicit reference to an emotion theory, the results show a lack of these explications. In 78.0% of cases the explicit reference is missing (n = 50). Twenty-two per cent of the sample refers explicitly to an existing theoretical foundation (see Figure 8).

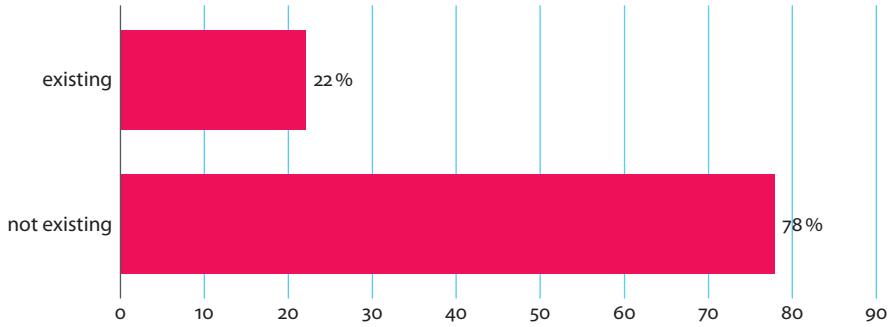


**Figure 8.** The percentage of explicit theoretical reference

### 4.2.4 *Operationalization of emotion*

In order to understand the empirical research on the relationship between emotion and language, the question of operationalization is one central methodological question. For this, this item gives an overview of the way emotion is made measurable. The results show a balanced picture. Twenty-eight per cent of studies measure basic emotions such as anger, fear or grief. One-fifth examines the change in background emotions, for example the inquiry of expression in a neutral, positive or negative hedonic tone by Klann-Delius and Kauschke (1996). In 16.0% of the studies emotion is measured by pathological disorders, for example with the Child Behavior Checklist by Achenbach (1992) (see Figure 9).

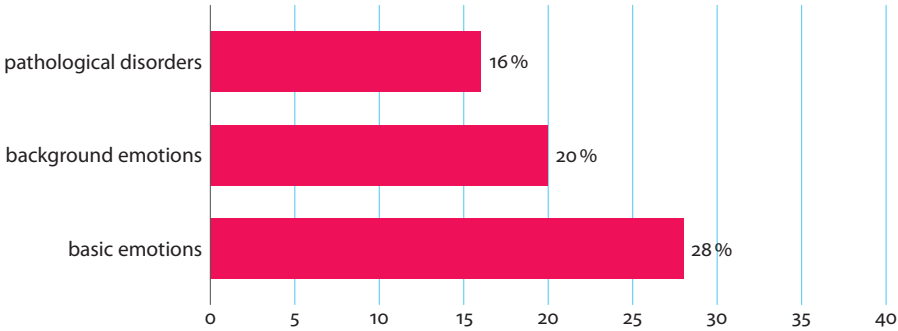


**Figure 9.** The percentage of the operationalization categories of emotion

Furthermore, three theoretical perspectives are observable in this sample: twenty-six per cent follow a functionalist's perspective (in the sense of Izards 1977 and Charlesworth 1982), 12.0% are connected with attachment theory with, for example, Anxiety Separation Tests (in the sense of Bowlby 1969, 1970) or 12.0% apply an intersubjectivity theory with micro-analysis of interaction (e.g. Trevarthen 1998, 2001, 2004) (see Figure 10).

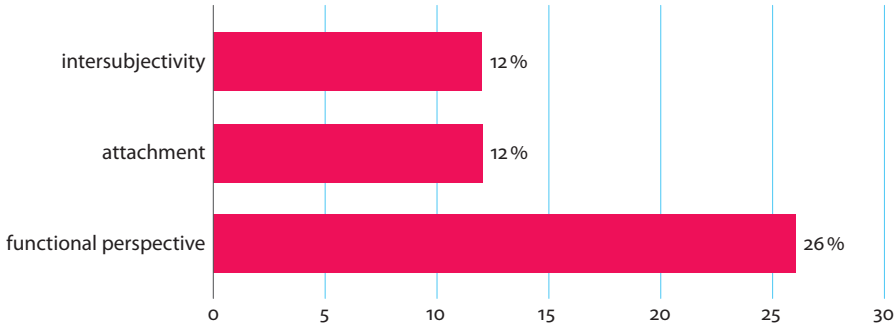


**Figure 10.** The percentage of theoretical perspectives on emotion

### 4.2.5 *Investigated emotions*

Looking at dealing with emotion, the content related to differentiation of emotion shows that 52.0% of the sample investigates emotion in a general way. Forty-eight per cent of the studies differ between types of emotion, so that each of the categorical items in Panksepp's (2010) Basic Emotional Systems is found. Play (26.0%) and Care (24.0%) are the most investigated systems, Fear and Lust are analysed in 6.0% of studies, Seeking is examined in 4.0%, while Rage and Panic are both examined in 2.0% of studies (see Figure 11).

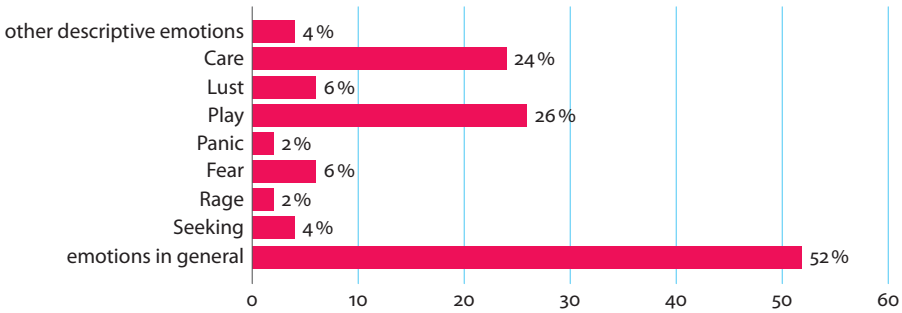


**Figure 11.** The percentages of investigated emotions

### 4.2.6 *Modes of communication and disciplinary differences*

Coming to the criteria-group *Language*, all of the different modes of communication such as verbal, nonverbal and paraverbal are observed in this sample. First, the results show a consideration of the verbal mode in each discipline.[2] But differences in the choice of examined modes can also be observed. For instance, Psycholinguistic studies do not analyse the nonverbal mode. Developmental Psychology and Speech and Language Pathology inquire into each of these modes. Developmental Psychology employs nonverbal modes most frequently (31.7%; n = 41) (see Figure 12).

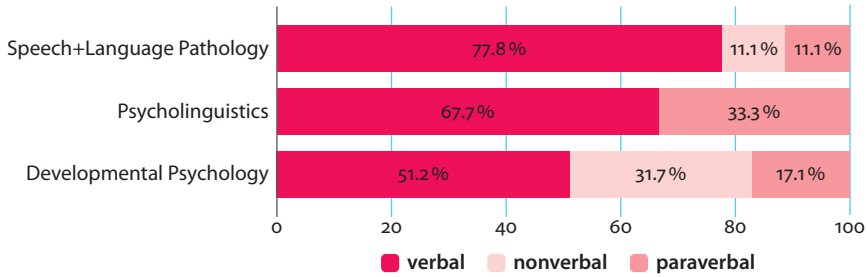


**Figure 12.** The percentage of communicative modes in selected disciplines

### 4.2.7 *Subject's age at first time of examination*

Coming to the results of the *Subject*-related criteria, the results of the age at first examination time (or the youngest cohort in a cross-sectional study) show a wide spread of different ages. Most of the studies (30.0%) examine infants from birth until the fourth month of life. In the timespan between the fifth and the eighth month fewer infants (12.0%) are observed for the first time. The same decline can be recognized in the timespan from 9 to 12 months (4.0%). Studies with the first examination time at 13 to 16 months have a percentage of 6.0%. In the timespan from 17 to 20 months, the infants take part in 8.0% of the studies. In 4.0% of the studies the infants were between the ages of 21 and 24 months. And within a short age range (from 25 to 32 months) there is no study starting the examination. There is a recognizable group of studies (8.0%) which sets the first examination time at 33 to 36 months. Another often chosen timespan (8.0%) is observable between 57 months (4 years and 9 months) and 60 months (5 years). The oldest infants at first examination are between the age of 93 months (7 years and 9 months) and 96 months (8 years) (see Figure 13).

2. In the sub-study the disciplines differ from those of the main study because the disciplines Clinical Psychology, Reproduction Endocrinology and Pedagogical Audiology are part of the "others" category.

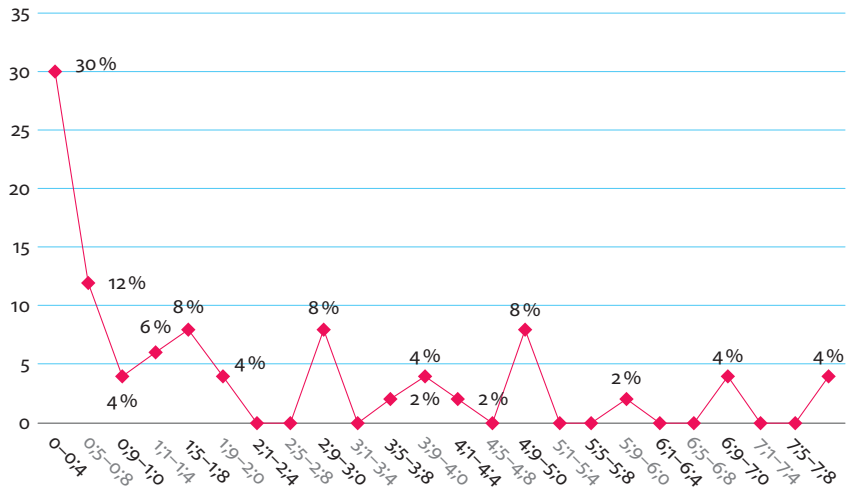


**Figure 13.** The percentage of subjects' age (year; month)

With regard to the disciplinary findings, these results draw different pictures concerning to the choice of subjects (see Figure 14). Developmental Psychology examines the lifespan after birth to 4 months in most of their studies (54.2%; n = 25). Within this disciplinary field, the oldest age of subjects at first examination lies in the timespan from 81 months (6 years and 9 months) to 84 months (7 years), where one study examines infants in this age group (4.2%). In most Psycholinguistic studies examination begins at an age between 5 and 8 months (25.0%; n = 14) as well as between 17 to 20 months. The first examination date resp. the youngest cohort sees one Psycholinguistic study in the first month of life (8.3%). The oldest infants are analysed in the timespan from 57 months (4 years and 9 months) to 50 months (5 years). In the field of Speech and Language Pathology, most of the studies (28.6%; n = 8) start their examination between the ages of 93 months (7 years and 9 months) and 96 months (8 years). The earliest examination date resp. the youngest cohort takes place between 17 and 20 months (see Figure 14).

### 4.2.8 *Consideration of subject's developmental state*

The results of the consideration of developmental state show that 80.0% of the subjects in this sample are without any abnormalities. Ten per cent of subjects are diagnosed with a speech and language impairment (SLI) – in 6.0% subjects with SLI are part of the examined sample (partial) and in 4.0% subjects with SLI constitute the whole sample (total). The divergent development of emotional development is considered in 4.0% of the studies (2.0% each, as part of the sample and as the whole group). In 2.0% of the studies the subjects are diagnosed with a general impairment. Further, 4.0% of the studies consider a pathological emotional condition of the caregiver (see Figure 15).


**Figure 14.** The percentage of subjects' age in selected disciplines (year; month)

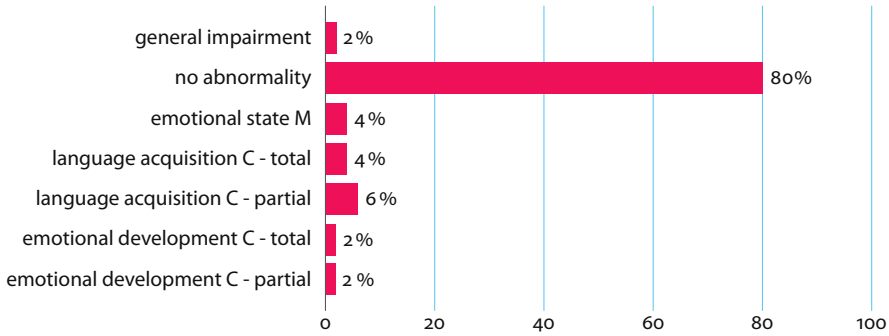


**Figure 15.** The percentage of subjects' developmental state (abbreviations: C: child; M: mother)

### 4.2.9 *Consideration of subject's socio-economic state*

The results of the consideration of socio-economic state (SES) show that 34.0% of the studies do not give any information about this characterization of subjects. Ten per cent of the studies state their sample consists of subjects and families with a "*mixed*" SES. The middle SES constitutes 36.0% of cases. Two per cent of the studies consist of a subject group with a range from middle up to high SES. Another 6.0% of the studies examine subjects with a range from middle to low SES. In 12.0% of the sample a low SES is considered (see Figure 16).

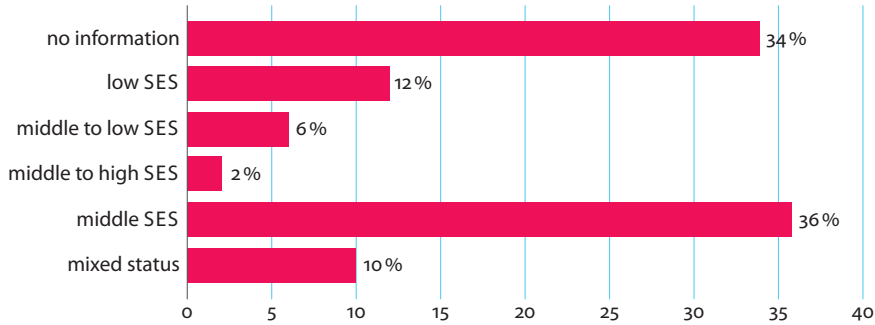


**Figure 16.** The percentage of subjects' socio-economic state

### 4.2.10 *Consideration of ethnicity and migration*

Similar to the results of SES, the explicit consideration of ethnicity or migration history of the subjects and families is not mentioned in 46.0% of cases. Furthermore, 22.0% of the studies examine a sample, which belongs to no "special" ethnical group. In 4.0% of the studies subjects with a migration background are included. Additionally, 2.0% of the studies consider migration in relation to different nationalities.

The consideration of ethnicity takes place in 12.0% of studies; here the subjects are part of a whole sample and in 4.0% a "special" ethnic group builds the whole sample. In 2.0% of the studies different nationalities are examined (see Figure 17).

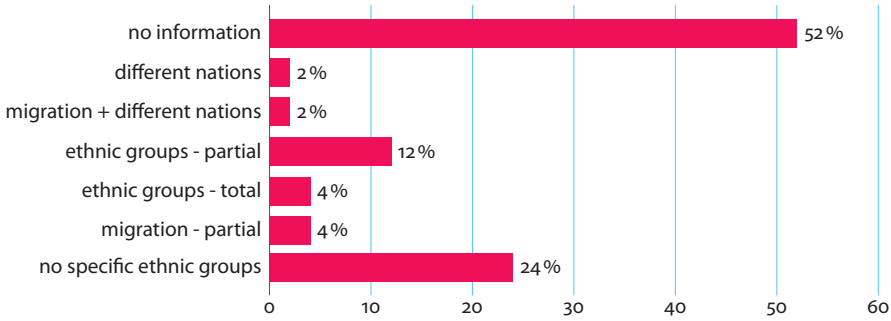


**Figure 17.** The percentage of consideration of ethnicity and migration

### 4.2.11 *Choice of settings and the change since 1970*

The results of the last group of items concerning the *Methodological Procedure* give another picture of the studies. Looking at the results of "Setting," it is observable that test measurement is the most chosen instrument with a percentage of 30.0%. Further, 22.0% of the studies proceed in an eliciting way in a laboratory. Twelve per cent of studies examine in the natural home environment of the families. Another often applied procedure is the combination of different settings: as laboratory and test-settings in 6% of studies, elicited and natural settings in a laboratory in 6%, laboratory settings and in vivo in 4% as well as test-settings combined with in vivo in 6% (see Figure 18).

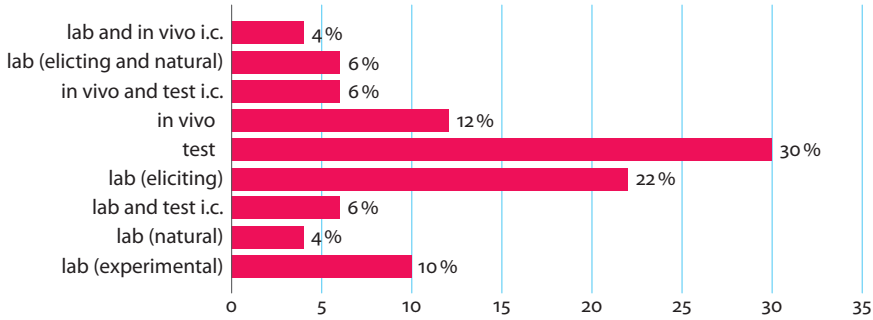


**Figure 18.** The percentage of choice of settings

Looking at the change in the choice of settings, the in vivo setting is the starting point in the seventies. In the eighties the repertoire changes to laboratory- (natural and elicited) and test-settings. In the time from 1990 to 1999 the repertoire expands to include

up to nine different types of settings. Test-settings are the most often applied (21.4%; n = 14). In vivo is chosen in 7.1% as a unique setting and combined (i.c.) with other settings in 14.3%. For the first time experiments in a laboratory are implemented (14.3%). Between 2000 and 2010 test-settings are observable in 28.6% and in another 10.7% test-settings are combined with other settings (n = 29). Also the elicited setting in a laboratory is often applied in the studies (32.1%). In 14.3% the in vivo setting is implemented as a unique setting; additionally it is combined in 3.6% of the studies (see Figure 19).

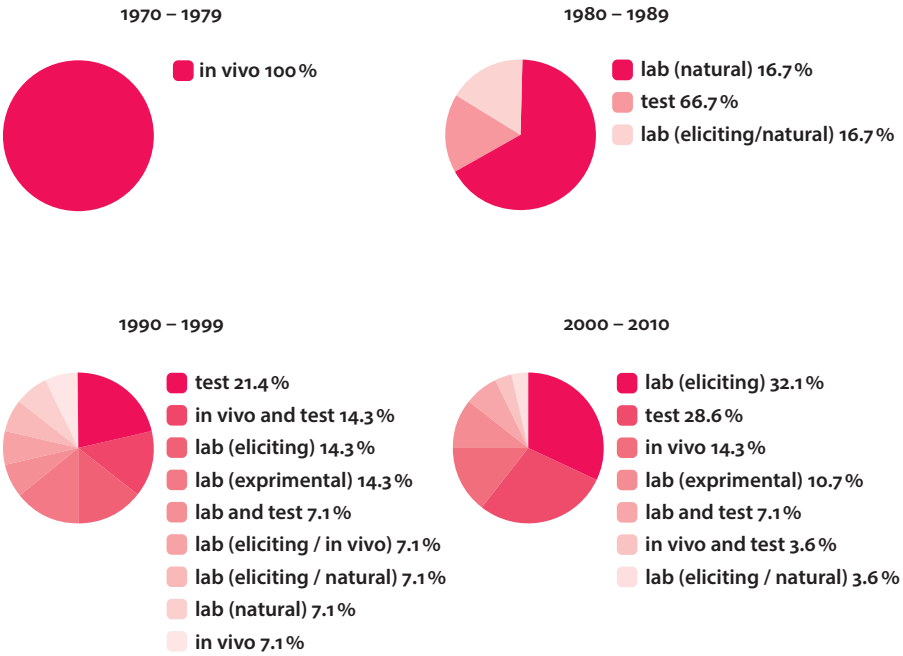


**Figure 19.** Choice of settings since 1970 (abbreviation: i.c.: in combination)

### 4.2.12 *Communication focus and disciplinary specifics*

With regard to the disciplines, the results concerning the choice of setting give a specific picture: Developmental Psychology foci are set 49 times in their studies (n = 49). In 22.4% this discipline also considers the reciprocity of the dyad. Developmental Psychology does not consider siblings in any of their studies. Psycholinguistic studies foci are set 19 times in their examination (n = 19). Reciprocity is analysed in 5% of their set foci. Siblings are examined additionally in 11%. In Speech and Language Pathology foci are set 11 times. Most of the time, the focus is set on the child. Mother, siblings and reciprocity of the dyad is examined each, once, and with a percentage of 9.0% (see Figure 20).

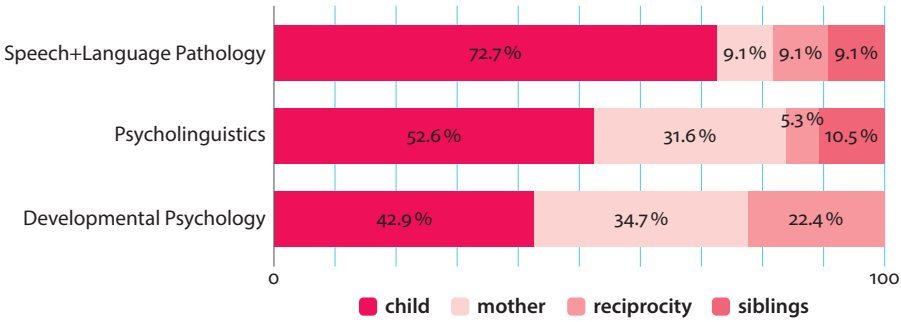


**Figure 20.** Communicative focus in relation to selected disciplines

#### 4.2.13 *Applied method and disciplinary specifics*

Combining the results of applied methods within the disciplinary fields gives an informative picture. Developmental Psychology applies 66 methods (n = 66) in their studies. Interaction analysis with the child is the one which is mostly employed, with a percentage of 30.3%. As well as this, interaction analysis with the mother is often applied in this discipline (22.7%). Besides interaction analysis, Developmental Psychology studies use interviews with mothers as a method for gaining information in 9.1% of cases. Also assessment with language acquisition tests is used in Developmental Psychology (7.6%). Furthermore, it is noticeable that this discipline operates with a wide range of different types of methods.

Psycholinguistics results show that 30 different methods are implemented in this sample, with interaction analysis also being employed in this field too. Analysis of the interaction behaviour of the child is used in 16.7% of cases and analysis of the mother is used in 10.0%. Psycholinguistic research frequently applies text analysis for children's speech (13.3%) as well as for caregiver's speech (6.7%). The assessment of cognitive development with tests is also a common method with 20% of their applied methods.

Speech and Language Pathology applies 23 methods for gaining information. A questionnaire on the child's behaviour and language development tests are both implemented most frequently, each with a percentage of 26.1%. Tests for emotional as well as cognitive development are also employed in this field, each with a percentage of 13.0% (see Figure 21).

## 5. Discussion

### 5.1 Discussion of main study results

#### 5.1.1 *Is there a paradigm shift?*

In this sample, the few studies carried out during the hundred years after Darwin hint at the disregarding of emotion in theoretical language research. The rise of publication in this sample in the 1980s could be linked to a new consideration of this construct.

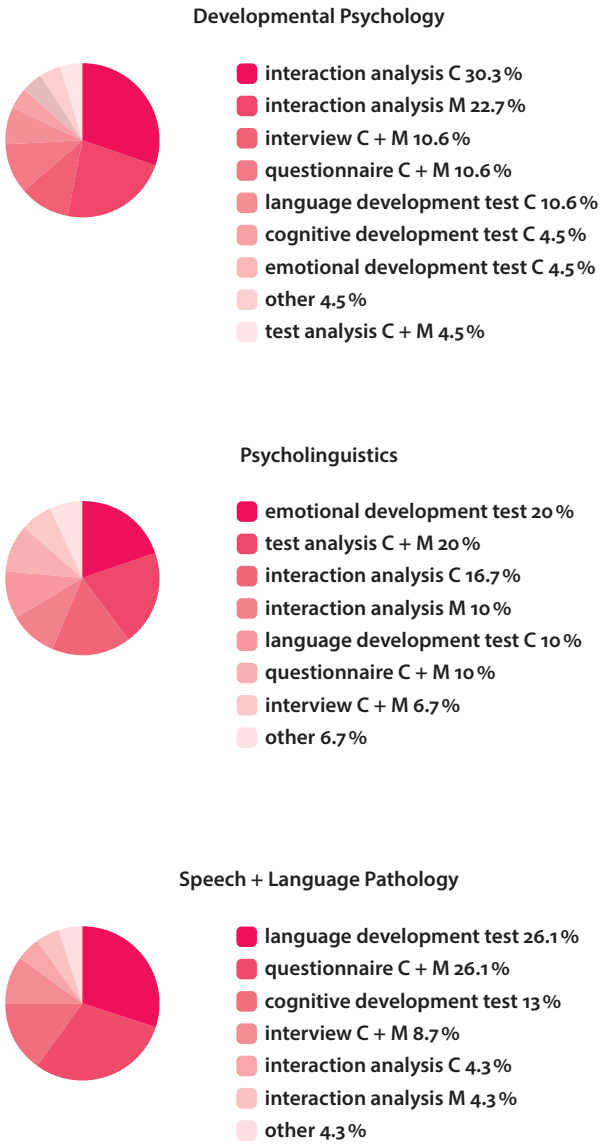


**Figure 21.** Applied methods in selected disciplines (abbreviations: C: child; M: mother)

A reason for this rise could be the growing interest in dyadic relationships in those years – a phenomenon which continues into the nineties. The explosion in the number of publications in the years from 2000 to 2010 shown in this sample hints at a paradigm shift, from cognitive perspectives to a consideration of emotion. Because of this, the relationship between language and emotion cannot be ignored anymore and should influence the conception of research, therapy and pedagogy.

### 5.1.2 *Disciplinary boundaries and research interests in transition*

Concerning the disciplinary research interest since 1970, the results show the first disciplines that inherently carry out research into language or emotion. Thus, results on Psycholinguistic studies show a relatively high amount of studies dealing with this topic in the 1970s. The wide range of disciplines which examine the relationship might hint at another sophisticated phase of research in this field. The results indicate that disciplinary boundaries exist and build the starting point of a research history, but the interest of different disciplines is widened and therefore changes.

### 5.1.3 *Linguistic levels and codes – too unilateral?*

Pragmatics and semantics seems to be the most accessible levels with regard to the operationalization of emotion. Words and the usage of words are, perhaps, very close to our daily understanding of emotion. Thus, studies on prosody, which examine the physical outcome of an emotionally voice, is also a highly examined feature in this sample. So there is research on the main aspects of the construct, but interesting and perhaps deepening approaches concerning linguistic codes such as semiotics or syntax are not very often acquired. With this in mind future research on language seen as a whole system should include different linguistic levels and codes.

### 5.1.4 *Linguistic decisions in the context of disciplinary borders*

The results show disciplinary preferences with regard to linguistic levels and codes. Disciplines, which carry out research into development and developmental impairments, seem to more frequently examine the usage of language. This might hint at a lack of a detailed analysis of this construct. It could be possible that there is a lack of knowledge about language and the methods for gaining language data, e.g. in Developmental Psychology. The approach of Speech and Language Pathology seems to go in a direction where language is seen in a general way. This could be the result of seeing language impairment in a holistic way. In Linguistics and Psycholinguistics, the linguistic levels such as semantics and syntax (especially in Linguistics) and a wide range of different levels and codes are relevant for this research. This enables the systematic analysis of language and goes along with their disciplinary interests. These findings give the first hint at the necessity for interdisciplinary exchanges. In order to design new research the combination of interdisciplinary approaches should be considered.

## 5.2 Discussion of sub-study results

### 5.2.1 *Trends in research interest*

If you have the highly emotional marked style of these early interactions in mind, it should not astonish you that research on the relationship between language acquisition and emotion starts with an examination of the protoconversation. The following broad range of thematic clusters seems to hint at an up-coming diversity of questions

and interests, something which began in the eighties. Studies concerning the verbal reception of emotion seem to answer fundamental issues of that time. In the nineties the consideration of pathology begins. Previously, language impairment was seen in a cognitive and language specific way. For the first time language impairment is seen in relation to emotional aspects. In contemporary studies a tendency to look at the social system and environment can be seen, because of the high occurrence of studies concerning the relationship between IDS and ISL. The rejection of an isolated view on language disorders is also observable in the growing number of studies examining the comorbidity of pathologies. Questions concerning the pathologies and the conception of new studies should be enforced in order to get more information to design therapy, counselling and support as well as on developmental processes in general.

### 5.2.2 *Cross-sectional versus longitudinal studies*

The results concerning duration and thematic direction show that hypotheses which should be examined in a process-oriented way are designed cross-sectionally (see 4.2.2) – as with the research on IDS, on protoconversation as well as the research on the relationship between IDS and ISL, which are mostly conducted cross-sectionally. Also, studies on the comorbidity of pathologies, which are designed in a longitudinal way, could give some indication of developmental pathways. Financial and temporal factors might influence the choice of duration styles, as cross-sectional designs are simpler to realise than longitudinal ones, with regard to time and economic issues.

### 5.2.3 *Research without explicit emotion theory?*

With respect to the missing explication of an emotion theoretical approach it could be stated, most of the time, that emotion is rarely recognized as a construct (see 4.2.3). One reason for this disregarding of emotion could be problems in defining emotions. Secondly, our everyday theories of emotion could be a reason for us not being aware of the necessity to define emotion concretely. But research without any explicit theoretical approach of both constructs does not seem adequate. Thus problems and the emotion theoretical dispute on these problems should influence the design and the implementation.

### 5.2.4 *Operationalization of subjective aspects?*

Results concerning operationalization seem to indicate that concrete expression or pathologies are indicators of emotion. In this view supposed objective criteria are employed to give clues into subjective and intersubjective feeling. The examination of variations in vitality contours is not as intrusive as the defining of concrete emotions, but this still only gives hints into the expressed emotion of one individual. Emotions and emotional valences should be seen in relation to the subject, perhaps in additional qualitative methods, and to the person that receives the information, e.g. by following an intersubjective approach.

### 5.2.5 *Investigated emotions*

But looking at the differentiation of emotions in the studies, it is evident that most of the studies do not distinguish between emotions. Therefore the question arises whether this result shows a simple and daily approach to the examination of emotion or if it is not viable to distinguish emotion. It depends on the assumptions the researcher states and how these assumptions are theoretically founded. If studies do differentiate, most of the studies will analyse emotions such as Play and Care, which could be seen as constitutive of attachment. Other emotions which could be potentially constituent for development, e.g. Seeking, Lust, Panic and Fear, are disregarded. Problems in gathering negative emotions in experimental or eliciting settings in a laboratory might be the reason for this lack. One way of dealing with such problems could be a setting which conducts data in a known and safe environment. Therefore situations could emerge in which a wide spectrum of emotions is observable, including negative ones.

### 5.2.6 *Disciplinary borders and limitation in determined modalities*

The results concerning modes of communication imply disciplinary concentration on modalities: the nonverbal communication mode is disregarded in examinations of the language system (see 4.2.6). In terms of intersubjectivity theory, meaning is built in the mutual and intersubjective process of exchanging multimodal codes (see Lüdtke 2012). For this the nonverbal side of communication is equally important in the analysis of language acquisition processes. A reason for this focus could be the existence of historically grown, identity-establishing and disciplinary borders. Another reason might be a lack of knowledge about gathering nonverbal information on the part of disciplines such as Psycholinguistics, for example. Future research should enforce the collaboration of different disciplines in order to design approaches which allow systematic language examinations and multimodal analyses.

### 5.2.7 *First examination date consistent with disciplinary border?*

Respectively, the results concerning the choice of disciplines and the first time of examination give hints as to disciplinary borders (see 4.2.7). Developmental Psychology examines mostly very young children. For this, analysis of pre-linguistic conditions is implemented in this field. Psycholinguistic studies frequently start their investigations at a developmental age, when language is already present. Additionally, Speech and Language Pathology begins at a later age, when linguistic analysis becomes possible. It is evident that those ages are chosen because of their scientific research interest – though there is a need to expand the mind and act in an interdisciplinary way in order to get a complex picture of development.

### 5.2.8 *Abundance of "normally developed" samples*

In most of the studies, subjects with a deviant developmental state seem to have no special importance. Developmental conditions, which could influence protoconversation and language acquisition, are most frequently disregarded. Those studies are

designed in order to gain data on "normal" unimpaired language development. But research on deviant development is required to gather more information on future therapy and counselling concepts as already mentioned (see 5.2.1).

**5.2.9** *No need for a socio-economic state?*
The results concerning SES seem to imply that there is no need to consider this. But, on the contrary, SES could be an important impact factor for communication and language development and even on preverbal communication, because language acquisition always takes place in a socio-sphere with its social dispositions (see Lüdtke 2012). Therefore future research should recognize these dependencies in order to gain more information on impact factors.

**5.2.10** *Are issues of ethnicity considered enough?*
As well as deviant developmental aspects and SESs being disregarded, aspects of ethnicity and migration are hardly considered – even though these aspects influence early development too. Gratier has shown that a burdening migration situation influences the way mother and child communicate (see Gratier 2003). With this in mind ethnicity and migration should be considered more frequently in future research.

**5.2.11** *Standardized versus natural*
Coming to the methodological items, the choice of setting is mostly standardized, even in recent studies. Only a few studies analyse a situation which is undisturbed and familiar (see 4.2.11). The reason for this preference might be qualified more simply. Sensitively dealing with the choice of setting, or additionally an examination in a non-intrusive environment, seems to be necessary in the field of language and emotion, because even the appearance in an unfamiliar laboratory could be an influencing factor.

**5.2.12** *Dialogue and reciprocity*
Only a few studies examine the reciprocal action in mother-child dyads. Psycholinguistics and Speech and Language Pathology, in particular, disregard the connection of both interacting partners. These disciplines, for example, set the focus on the mother's speech sounds. Speech and Language Pathology focuses mostly on the child. With respect to innate intersubjectivity theory, it seems inevitable though to analyse reciprocal processes. More studies, also studies in the field of pathologies, should focus on reciprocal processes between a mother and a child.

**5.2.13** *Applied methods – interdisciplinary methods?*
Most of the studies analyse the processes in interaction. Also many test methods are applied in this sample in order to gain information on language, emotion or cognition of the subject. But analyses of the text are employed comparatively less. This might hint at a disregarding of systematic analyses of language. As well as within the other criteria

items, disciplinary tendencies are recognizable. Psycholinguistic research examines spoken language in a detailed text analysis. These findings again direct us to desiderated approaches, which combine interdisciplinary work.

## 6. Outlook

Finally we can calculate that this small sample gives an interesting picture of the research field with regard to the relationship between language and emotion. Results hint at a lack of interdisciplinary approaches which deal in a complex way with both sides of the relationship between emotion and language. It seems to be inevitable that research should adopt such approaches, with this domain in particular, because language and emotion permeate human life in an infinite number of ways. Research, therefore, must look beyond any disciplinary borders. Another salient point in this examination is that only normative groups are considered in this sample. In particular, the investigation of deviant biographies could develop therapies and pedagogical approaches which might be more effective, because of the combined focus of language, emotion and contextual factors.

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