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Polarised Worlds: Female and Male Inner States in Children's Reading Anthologies

Mundos polarizados: estados internos masculinos y femeninos en antologías de lecturas infantiles

Móns Polaritzats: Estats Interiors Femenins i Masculins a les Antologies de Lectura Infantils

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Abstract

Experts on literature and pedagogy from a wide range of countries and traditions currently argue for including literary texts with diverse characters in the curriculum, in order to provide children with varied reading experiences and foster their outgroup empathy skills. In this article, our aim is twofold. Firstly, we contribute to the debate in question by examining how the inner states (emotions and cognition) of female and male characters are portrayed in a purposeful sample of 44 prose excerpts from Czech Year 3 reading anthologies. Secondly, we present an innovative procedure for analysing texts that allows for the exploration of a selection of literary texts as individual entities and at the same time their analysis as an aggregate whole. Our analyses show that female characters' inner states tend to be underrepresented, especially regarding cognition. While we have not found significant differences in the overall quality of female characters' inner states in comparison to their male counterparts, individual excerpts tend to strongly highlight the inner states of female or male characters, respectively, thus creating story worlds with a distinct female-vs-male orientation.

Keywords: software-assisted literary analysis, emotion, cognition, gender, reading anthologies

Resumen

Expertos literarios y educativos de diferentes países y tradiciones argumentan actualmente a favor de incluir textos literarios con personajes diversos en la enseñanza, con el fin de proporcionar a los niños y niñas experiencias de lectura variadas y fomentar sus habilidades de empatía hacia aquellos que son diferentes a ellos. En este artículo nuestro objetivo es doble. En primer lugar, contribuimos al debate en cuestión examinando cómo se representan los estados internos (emociones y cognición)

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de los personajes femeninos y masculinos en una muestra cuidadosamente seleccionada de 44 fragmentos en prosa de antologías de lectura del tercer año de Educación Primaria en la República Checa. En segundo lugar, presentamos un procedimiento innovador de análisis de texto que permite explorar una selección de textos literarios como entidades individuales, pero también su análisis como un conjunto global. Nuestros análisis muestran que los estados internos de los personajes femeninos tienden a estar subrepresentados, especialmente en lo que respecta a la cognición. No hemos encontrado diferencias significativas en la calidad general de los estados internos de los personajes femeninos en comparación con los masculinos; sin embargo, los fragmentos individuales tienden a resaltar fuertemente los estados internos de personajes femeninos o masculinos respectivamente, creando así mundos narrativos distintos centrados en lo femenino o lo masculino.

Palabras clave: análisis literario asistido por software, emoción, cognición, género, antologías de lectura.

Resum

Experts literaris i educatius de diferents països i tradicions argumenten actualment a favor d'incloure textos literaris amb personatges diversos en l'ensenyament, amb la finalitat de proporcionar els infants experiències de lectura variades i fomentar les seues habilitats d'empatia cap als que en són diferents. En aquest article el nostre objectiu és doble. En primer lloc, contribuïm al debat en qüestió tot examinant com es representen els estats interns (emocions i cognició) dels personatges femeninsi masculins en una mostra acuradament seleccionada de 44 fragments en prosa d'antologies de lectura del tercer any d'Educació Primària a la República Txeca. En segon lloc, presentem un procediment innovador d'anàlisi de text que permet explorar una selecció de textos literaris com a entitats individuals, però també la seua anàlisi com un conjunt global. Les nostres anàlisis mostren que els estats interns dels personatges femenins tendeixen a estar subrepresentats, especialment enallò que respecta a la cognició. No hem trobat diferències significatives en la qualitat general dels estats interns dels personatges femenins en comparació amb els masculins; tanmateix, els fragments individuals tendeixen a ressaltar fortament els estats interns de personatges femenins o masculins respectivament, tot creant així mons narratius distints centrats en allò femení o allò masculí.

Paraules clau: anàlisi literària assistida per software, emoció, cognició, gènere, antologies de lectura

1. Introduction

Introducing children to diversity through fictional texts has become one of the imperatives for literature teachers, librarians, and other practitioners today. Encountering texts with characters of varied background and gender is supposed to provide different readers with the opportunity to empathise with characters similar to them (using texts as 'mirrors'), or enable them to face new situations and look at them from a different angle (using texts as 'windows'), and thus enhance their empathy in the longer term (Bishop, 1990; Kucirkova, 2019). In the last decades, abundant literature has been published concerning the underrepresentation of specific character – including female – types in literary texts (Biemmi, 2012; Casey et al., 2021; Crisp and Hiller, 2011; Hamilton et al., 2006). The data convincingly shows that while girls lack the kind of reading material that might serve as 'mirrors', boys are deprived of certain kinds of 'windows'.

We can distinguish between quantitative and qualitative approaches to this issue. The quantitative approach examines *whether* there are certain types of characters present in literary texts (male, female, non-binary), and if so, *in what proportions* (Clark et al, 2003; Weitzmann et al., 1972; Kraicer and Piper, 2019). Qualitative approaches look more closely into the context of character rendition, e.g., with a focus on issues of diversity and/or stereotyping in children's literature (Forni, 2020) and non-literary texts used in educational settings (Biemmi, 2012). While quantitative methods may enable us to work with large amounts of text data and help us identify places of imbalance or observe trends in character representation, they are insufficient in describing the quality of different voices. Therefore, Clark (2002) calls for the inclusion of more nuanced, qualitative approaches when addressing the issue. Indeed, quantitative studies have more recently begun to adopt a more qualitative point of view, asking *how* certain types of characters are portrayed in texts, e.g., in terms of their centrality in the story (Casey et al., 2021), the portrayal of their emotions (Tepper and Cassidy, 1999) or through what stylistic features they are portrayed (Burke & Coats, 2022).

In this article, we join the debate on the representation of male and female characters in narratives for children, taking a rather qualitative perspective which is nevertheless informed by an earlier quantitative study (Segi Lukavská & Kuzmičová, 2022). Assuming that, in order for a reader to 'read the mind' of a character and thus stimulate empathy skills, it is necessary that the character is shown to think or feel, we examine female and male characters' inner states (emotions and cognition).As we demonstrate below, even texts which feature both male and female characters can differvastly in the depth and variety of portrayed inner states.

Our purposeful sample of texts (*N* = 44) consists of narratives included in reading anthologies (*čítanky*): textbooks compiling literary text excerpts of different lengths, genres, and styles, and by various authors from different historical periods. These anthologies are widely used in Czech primary schools to foster children's reading skills but also to teach children, starting at a very young age, about quality literary texts. Working with a middle-size, diverse set of literary texts, we also suggest possible ways of mapping inner state representation while optimising literary research through software-assisted analysis.

In this article, we join the debate on the representation of male and female characters in narratives for children, taking a rather qualitative perspective which is nevertheless informed by an earlier quantitative study.

While the results of our text analyses may be of special relevance in educational research and teaching for diversity, we hope that the description of our intuitive and easily adaptable

methodology will be of use to researchers beyond the field of education, e.g. literary scholars conducting targeted studies of edited collections, whether single- or multi-authored.

In the following sections, we first introduce our workflow as well as the benefits and challenges of software-assisted analysis on the example of our text data. We then present the results of analysis, focusing on texts in terms of their tendency to inhabit the narratives predominantly through the emotions and cognitive states of either male or female characters (thus making them *gender-polarised*). Finally, to provide another glimpse into the procedure, we include a case study of two polarised excerpts from our sample.

2. Methodology

The study presented in this article is part of a larger project exploring how characters' inner states are represented in Czech reading anthologies for Year 3 pupils. Wishing to grasp the corpus of 530 text excerpts as a whole while also paying attention to the particular characteristics of individual texts, we chose to combine 'distant' (whole-text, corpus-wide) and 'close' (in-text) methods in a two-step approach. This proved fruitful during the first phase of the project, in which we focused on the presence/absence and potential complexity of inner states as experienced by characters of four different types: female, male, animal, and other. Working with all narratives on the whole-text level, we observed striking imbalances in the representation of male and female characters throughout the corpus. Still, we were able to interpret and calibrate the findings only after a closer look at each text (Segi Lukavská & Kuzmičová, 2022).

The current article describes the process of in-text analysis in the case of 44 individual excerpts in a purposeful sample of texts. To explain how this sample was created, we must briefly outline some of the preceding steps. After digitising the anthologies, we selected all texts with narrative structure. Both authors of the present article then proceeded to read through these texts, assigning codes in such categories as author, publication period, point of view, and word count. Trying to get an idea of what the anthologies offer to children in terms of the portrayal of inner psychological states, we further coded among three different instances (bodily engagement, emotions, and cognition) as these pertained to four different types of characters (female, male, animal, and other). For those which did portray such inner states (any of the four instances), we further discriminated between less and more complex experience dimensions on a binary scale, with the aim of better understanding the depth with which characters were portrayed. Following Kukkonen's (2019) suggestion that character's active bodily engagement prompts a deeper sense of reader-character connection, we distinguished between characters who merely

observe events and those who play a more physically active role in the story. We further distinguished between primary and secondary emotions (Evans, 2001; Nikolajeva, 2013), trying to map whether the different types of characters tend to be ascribed basic emotions (such as fear) or whether they develop more complex emotions (such as guilt). Within cognitive states, we coded for lower- and higher-order cognition, based on Zunshine's (2006) concept of levels of intentionality. Our aim was to find out whether the characters orientate their thoughts strictly to themselves or whether they employ higher levels of mentalisation skills, such as thinking about the motivations of others.

In our previous research, cognitive and emotional states proved to vary much more widely across character types than bodily engagement, hence we established the text sample based on cognition and emotion. Having previously discovered that longer texts consistently featured more complex representations of characters' inner states, we chose only among excerpts above median word length (490+ words; *N* = 267). Aiming for a maximally balanced text sample, we selected 44 texts, corresponding to 16.5% of all longer excerpts. We primarily picked texts that had been coded as representing both male and female (complex) characters. To ensure the diversity of the sample, texts were selected from as many anthologies as possible, with diverse representation in terms of author gender (both male and female), provenance (Czech works and foreign works in translation), and historical period (19th to 21st century). We further strived to prioritise texts written by the most frequently represented authors.

Having established our sample, we looked for a tool that would help us identify emotional and cognitive states in the texts, assign codes to the individual inner-state instances, and explore potential links between them. With regard to the size of our text sample, we opted for software-assisted annotation, namely Atlas.ti 8. Our choice was informed by rather general comparisons of the software options such as Paulus and Lester (2020), as well as Kimmel (2008, 2012), whose articles based on Atlas.ti annotation blazed the trail for software-assisted work in literary studies. To date, software-assisted analysis remains somewhat neglected in this field and is mainly limited to the thematic analysis of reader response (Swann and Allington, 2009; Fernandez-Quintanilla, 2020). Atlas.ti was chosen since it provides an intuitive user interface, visual aids useful for analysis (e.g. colour-coding – see Figures below), and flexible solutions for the coding procedure, such as grouping and re-grouping of the individual codes. It also offers features for easily sharing and exporting data into formats suitable for simple quantitative analysis, as well as communicating with other researchers within the scope of the software, all of which proved to be an added convenience for collaborative work.

Setting up the project in Atlas.ti, we uploaded all excerpts in .txt format and then created a separate *Document group* – our text sample. During the preparation phase, we carefully considered what types of codes, and at what level of abstraction, to select for in relation to our objectives, being aware that code selection represents the first phase of interpretation. After this preparatory work, we proceeded to a recursive process of reading the texts, creating *quotations* (i.e. text highlights available for later retrieval and analysis), and evaluating the interim progress. We read and re-read the individual texts multiple times, on the suggestion of Kimmel (2012), who argues that the time spent on repeated multiphase reading is compensated by improved workflow and methodological precision. Each new reading compelled us to consider the data in a slightly new light, and thus re-evaluate the established quotations and codes assigned to them.

Starting with the annotation procedure, we built upon previous research and coded for inner states (emotions and cognition) on two levels of complexity (lower- and higher-order cognition, primary and secondary emotions) as well as differentiating between four types of characters (male, female, animal, other). Recording all emotional/cognitive instances, we aimed to get a nuanced, in-depth understanding of the quality of the depicted cognitive and emotional states, but also a more precise idea of the respective centrality of different character types or even individual characters. We define 'emotional/cognitive instance' as the depiction of a specific emotional or cognitive state, no matter how extensive as measured in word count. Let us consider Fig. 1 as an example:

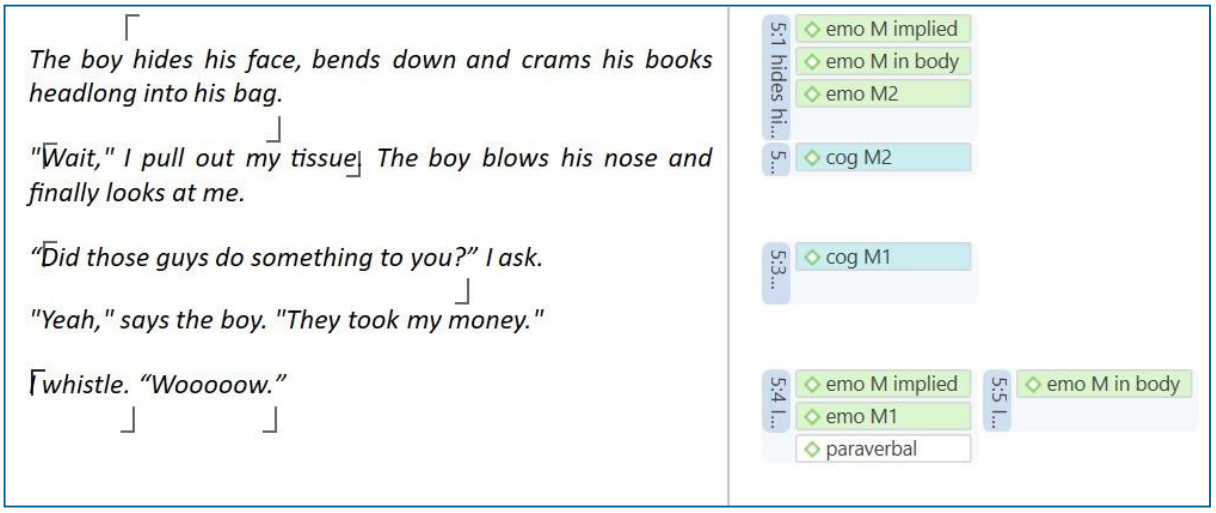


Figure 1. Passage from the excerpt *A Bullied Boy* by Alena Ježková in *Document manager*. The left side shows the literary excerpt with marked borders between the individual quotations. The right side panel captures the codes assigned to the quotations.

In Fig. 1, the text indicates through multiple means that the bullied boy might feel ashamed, vulnerable, humiliated, or sad: he avoids eye contact (EMO M IN BODY) and rushes away from

his saviour, the first-person narrator. The whole first sentence is nevertheless tagged as a single emotional instance, representing one (however complex) emotional state (EMO M2), 'M' signifying the character's male gender and '2' the level of the respective instance (secondary emotion). The implicitness/explicitness (EMO M IMPLIED) of inner states was another dimension we coded for, since empirical data suggest that this makes a difference in children's reception of texts and their potential development of empathy (Peskin and Astington, 2004).

Later in the excerpt, the narrator expresses astonishment in two different ways: first when he whistles, and later, with a prolonged interjection. Again, we understand such cases as only one instance of EMO M1 (primary emotion experienced by a male character). Yet we further differentiate on another level between the various ways an excerpt may express emotions, e.g. coding the narrator's whistling as EMO M IN BODY.

In fact, the embodiment of inner states is one of the key dimensions we decided to consider in the annotation. We presumed bodily experience would represent one of the important qualities of characters' inner states, and wanted to examine whether embodiment differed between male and female characters, as research suggests (Čermáková and Mahlberg, 2022). Our preliminary examination of the texts also indicated that characters' bodies play a crucial role in manifesting various inner states, especially implicit ones. Coding bodily expressions as emotional instances, we relied on general works on non-verbal communication (Argyle, 2013; Givens, 2002).

During the process of reading, we came up with several additional codes on an ad hoc basis. Proceeding bottom-up, we tried to grasp recurring situations portraying inner states that either escaped other code dimensions or represented a specific case of a repeatedly occurring inner state. As an example of the former, we created the code NARRATOR. We used this code to capture passages in which a non-personal (typically intrusive) narrator manifests inner states. With regard to the latter, we created the PARAVERBAL code (see Fig. 1) for marking those passages in which a character expresses emotion through the volume, speed, or voice pitch. to check for potential differences between male and female characters.

The partly inductive nature of our procedure resulted in some dead ends. For instance, during the initial annotation phase, it seemed important to differentiate between the ANTICIPATION of future events and active PLANNING. We therefore created two separate codes to grasp this difference. However, after going through the entire sample, these two codes turned out quite often to be barely discernible, compelling us to merge the two codes into one (ANTICIPATION; see Fig. 5 to find an example of PLANNING replaced with ANTICIPATION). Working with a diverse sample of texts, representing a great diversity of styles, such situations are inevitable. What

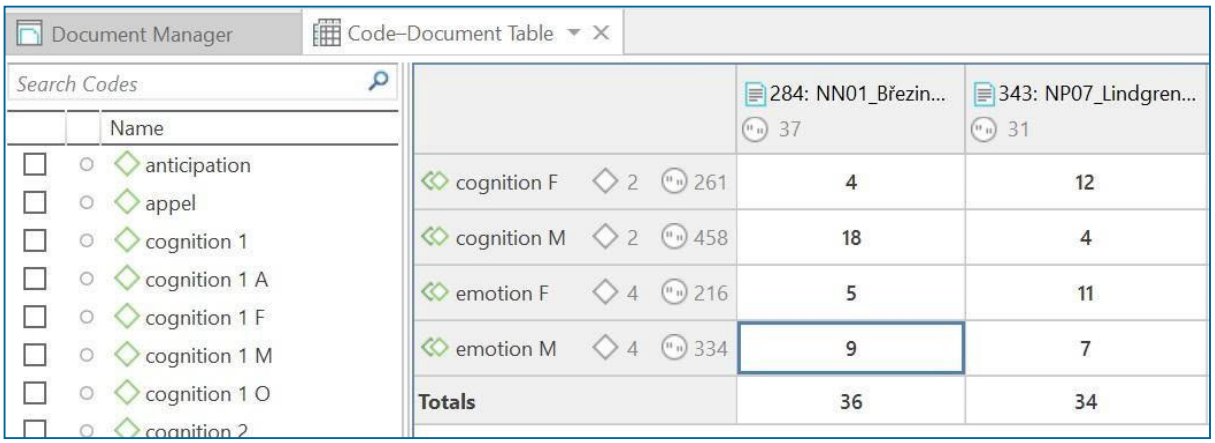
appears as crucial in one text is often completely absent in others. We ended up with 52 codes in total – a relatively low number (cf. Friese, 2019), but one that was sufficient for our purposes.

The annotation process presented various challenges. Especially when tracking for emotions, it is difficult to decide whether a passage captures a single complex emotional instance or several separate instances, or else, in cases of implicitly expressed emotions, whether a passage portrays any emotion at all (cf. 'the boy [...] finally looks at me' in Fig. 1 which may indicate the emergence of positive emotions between the two characters). In cases of doubt, *Comments* in Atlas.ti provided a good tool to tag the ambiguous cases that we wanted to return to later, for further discussion and assessment (using *Memos*). The two examples of emotional instances illustrated by Fig. 1 above also indicate another of the challenges we faced. The implied emotions are often depicted in an ambiguous way, making it difficult to draw a line between primary and secondary emotions. While whistling might be considered a conventional way to describe astonishment (a primary emotion), avoiding eye contact may refer to various emotions, primary (e.g. sadness, fear) and secondary (e.g. feelings of humiliation, shame). For instances like this, it was usually possible to differentiate by looking at the wider context.

With quotations, we have given significant thought to the ideal length at which to tag segments of text, especially in the case of authors who tend towards repetition (e.g. David Walliams), often yielding paragraph-length sections conveying a single inner-state instance. In such cases, we tried to stay flexible, tagging the passages in full to include all relevant data, and stratifying segments, when needed, by assigning new codes from other semantic domains.

We continually carried out qualitative data processing directly in Atlas.ti, making use of the *Query Tool*, *Code-Document Table*, and *Code Co-occurrence Table.* The *Query Tool* provided an efficient way to show the links ('proximity') of various codes while applying particular (e.g. Boolean) operators, and also made searches for particular examples, where necessary, exceedingly simple (in the case, for example, of exploring quotations representing male characters crying, or characters experiencing an emotional *and* cognitive state at the same time).

To examine the frequency of selected codes and code groups in the sample as a whole, and especially in various subsamples, the *Code-Document Table* was particularly valuable. Table 1 shows an example of a subsample, comprising information about two texts we analyse in the Case studies section of this article. A look at the *Code-Document Table* enables a quick *intra*textual comparison of the differences between representations of male and female emotional/cognitive instances, and an *inter*textual comparison of the number of quotations linked to the selected code groups.



	284: NN01_Březin... 37	343: NP07_Lindgren... 31
cognition F 2 261	4	12
cognition M 2 458	18	4
emotion F 4 216	5	11
emotion M 4 334	9	7
Totals	36	34

Table 1. *Code-Document table* in Atlas.ti capturing the number of male (M) and female (F) emotional and cognitive instances in *A Boy and His Dog* (284: NN01) and *Pippi Longstocking* (343: NP07).

Furthermore, by clicking on the respective fields of the Atlas.ti *Code-Document Table*, we were able to display the underlying quotations and get a synchronous view of the different inner states depicted in sample texts. Conversely, by clicking on a quotation, we could enter the *Documents section* to see the respective quotation in its context. In this sense, it is possible to work with the text in a manner similar to traditional literary analysis, but with the help of a digital tool that allows for quicker orientation in a given excerpt, so that one may readily find passages with a higher density of coded instances, or to distinguish between them based on colour coding, as shown in the Figures below.

The *Code Co-occurrence Tables* show the *proximity* of selected codes, i.e. how frequently some codes co-occur, as expressed by the c-coefficient (co-occurrence coefficient). This tool thus enables an efficient comparison of the strength of relationships between selected codes – considering the nature of our research, very often in gender-specific sets (cf. Table 2 in the Results section below).

Additionally, to run quantitative procedures, we converted the data capturing the numbers of types of emotional/cognitive instances acquired through *Code-Document Tables* into Excel sheets, creating an extended version of our tables used in the previous, whole-text study (Segi Lukavská & Kuzmičová, 2022), and in this way facilitating comparisons of the data obtained during the two consecutive steps. Then, we processed the data by applying basic descriptive statistics. Having analysed the results obtained through quantitative procedures, we came back to the software-assisted analysis, searching for meaningful ways to interpret data using the tools mentioned above.

3. Results

In this section, we first present the results obtained through quantitative analysis, followed by the results of our qualitative analysis of the emotional and cognitive states of male and female characters. With the quantitative approach, we examined the quantity of emotional/cognitive instances in the entire sample, with an eye to the results of our effort to gather texts which include both complex male and female characters.

In spite of this effort, our annotation procedure showed that female characters were portrayed with fewer emotional and cognitive instances in the text sample as a whole. In brief, we were able to identify significantly fewer female cognitive and emotional instances (*N* = 480) than those associated with their male counterparts (*N* = 790). This disproportion manifests itself across different types of instances (lower- and higher-order, implicit, and explicit).

Based on our sample, we calculate 1.5x more male (*N* = 332) than female (*N* = 219) emotional instances. With respect to the portrayal of cognitive processes, the gender gap is even more pronounced, with 1.75x more male (*N* = 458) than female (*N* = 261) cognitive instances. These disproportions seem to mirror the results previously reported in Segi Lukavská & Kuzmičová (2022), which finds

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that, from a corpus-wide and whole-text sampling of the same literary anthologies, female characters' inner states are underrepresented in comparison to their male counterparts.

Zooming in on individual excerpts from our sample, we often find that one gender dominates with respect to the number of emotional and cognitive instances. The number of these instances typically skews towards one gender or the other at ratios ranging widely from 0.02 to 12.5. These ratios seem to reflect the amount of attention paid to certain types of characters (cf. Woloch, 2003). In the most disproportionate texts, a male protagonist (or a group of boys) was accompanied by a lone and less significant female character (typically a mother or teacher), or else, conversely, a leading female character or characters by a male character. In this article, we use the term 'gender-polarised' to refer to those texts which show a significant disproportion in terms of the number of male and female inner-state instances. We mean this strictly with respect to the disproportionate representation of emotional/cognitive instances in the portrayal of male and female characters in individual texts; our use of the term *polarisation* should not be confused with 'gender polarisation' as described by Bem (1993), i.e. the tendency to describe femininity and masculinity as opposites.

Notably, all but four texts from our sample turned out to be *gender-polarised.* In the four exceptions, the ratio of female to male instances ranged between 0.7 and 1.3, showing the scarcity of texts in which male and female characters are portrayed with roughly the same depth and variety of inner states. Such texts, furthermore, tend to feature characters appearing in gender-opposite pairs (emperor and empress, sister and brother). Yet even in these exceptions, where the number of experiential instances is more balanced, there are considerable differences in the way female and male characters are portrayed. Female characters aredepicted as predominantly emotional (58% of all female instances); this is not the case, however, with their male counterparts (46% of all male instances).

Of the 40 polarised texts, 13 are female-centred and 27 male-centred. Quantitative analysis shows that the female-centred group as a whole tends to depict the emotional and cognitive states of female and male characters with more balance overall: the emotional instances in this group account for 40% of all female instances and 41% of all male instances. In the male-centred group, by contrast, descriptions of the emotional state of female characters make up 52% of all instances, in comparison to 42% in the case of their male counterparts. This shows that the ratio of male emotional and cognitive instances remains roughly the same throughout the sample, with male characters being more 'rational' than 'emotional'. The portrayal of female characters, on the other hand, tends to vary more widely between emotional or cognitive instances. However, with the exception of the female-centred group, female characters tend to be portrayed through their emotions more frequently than through their cognitive states.

Examining cognitive instances in terms of their complexity throughout the whole sample, lower-order cognitive instances are portrayed 1.7x more frequently than higher-order ones. The explanation seems obvious: characters more frequently think about their own situation, without considering the inner states of other characters. Higher-order cognitive instances typically appear later in a narrative, as lower-order instances build and characters' perspectives shift from their own experiences to those of others (cf. Figures in the 'Case Studies' section below). Notably, the difference between the disproportion of lower-order to higher-order cognitive instances in female characters is less pronounced than in their male counterparts: the ratio (lower- to higher-order) for female characters is 1.4; with male characters it is 1.9. Two mutually non-exclusive explanations can be applied to this observation.

Firstly, in several female-centred texts where female higher-order cognition instances dominate, female characters are featured in realistic settings (such as school), describing everyday social challenges, and interpreting the feelings of others. By contrast, in the case of male-centred texts which portray male characters in similarly realistic settings and with a similarly high number of

cognitive instances, this portrayal tends to involve little adventures or harmless mischief, focusing on plot rather than relationships among characters. Secondly, looking at those texts in which the portrayal of lower-order cognitive states is most disproportionate, we found several excerpts in our sample of male-centred adventures in which a male (boy) protagonist or protagonists are entirely absorbed in the present moment, without a thought for anything or anybody else; we found no examples of the adventure genre among the female-centred texts.

The prominent orientation of female characters towards others in the whole corpus is also indicated in a corpus linguistic study by Hejnišová, 2022. Carried out on selected verbs of thinking (for example, *to know*), what this study shows is that female characters are more frequently portrayed than their male counterparts as possessing knowledge about others. This can be interpreted as one of the indications that female characters are stereotyped as more caring and nurturing (Hamilton et al., 2006), and thus more prone to thinking about the needs of others.

Turning now to emotions, we found that primary emotional instances are portrayed 2x more frequently than secondary emotions. Similarly to higher-order cognitive instances, we observe that secondary emotions tend to occur later in a narrative, as a kind of superstructure developed while the characters gain depth. Analysis shows that female characters are portrayed with 2,5x more primary emotional instances than secondary ones. By comparison, male characters' primary emotional instances appear only 1,8x more frequently than secondary emotions. Notably, a higher ratio of female primary emotional instances in comparison to secondary emotional instances is depicted in female-centred texts. In this subsample, female characters are portrayed with 3,6x more primary emotions than secondary emotions. Looking more closely at the subsample, the highest ratio of primary emotions to secondary emotions appears in texts that are exceedingly rich in cognitive instances. Presumably, female protagonists in these texts are more likely to consider the thoughts and emotions of others than to experience complex emotions themselves.

In the last paragraphs of this section, we dispense with the quantitative study of polarised texts to take a closer look at the individual portrayal of female and male characters, with an eye to the *quality* of various cognitive and emotional codes. To grasp the specific qualities of male and female emotional/cognitive states, we focus on three distinct qualities: complexity (which we already commented on above), embodiment, and implicitness/explicitness. From this perspective, the differences in the portrayal of emotional and cognitive states for female and male characters proved to be generally subtle throughout our sample. In the next paragraphs,

we present some (though not all) of the differences found during the processing of the data with Atlas.ti tools.

Firstly, let us have a look at the most frequent types of codes describing cognitive instances: ANTICIPATION, REMEMBERING, and SPECULATION, see Table 2. When first processing our sample, we assumed that the portrayal of male characters would emphasize their thoughts about past and future, and speculation about various possibilities, while the portrayal of their female counterparts would emphasize a tendency to 'live in the moment'. However, this assumption was confirmed only in part. Considering the relative frequencies given by the c-coefficient (where 0 means the two given codes never co-occur and 1 means they always co-occur), male characters do tend to speculate more often – and, concurrently, to anticipate others' mental states or reactions more often – than their female counterparts.

	cognition 1 F 154	cognition 1 M 299	cognition 2 F 107	cognition 2 M 159
anticipation 153	**39** (0,15)	**62** (0,16)	**7** (0,03)	**20** (0,07)
rememberi... 35	**10** (0,06)	**19** (0,06)		**1** (0,01)
speculation 35	**5** (0,03)	**22** (0,07)		**4** (0,02)

Table 2. A *Code co-occurrence table* of the most frequent types of cognitive instances.

Table 2 shows ANTICIPATION, REMEMBERING, and SPECULATION co-occurrence between male (M) and female (F) lower- (1) and higher-level (2) cognitive instances. Grey numbers show the code's *groundedness* (the overall code frequency). The quantitative frequency of co-occurrence of the two codes are shown in bold. Numbers in brackets show the c- coefficient. The yellow dot marks cases where the relationship might be significant but the c-coefficient is very small, due to the fact that it is distorted by very big differences in code frequencies.

In metaphorical descriptions of embodied cognitive states (METAPHOR), narratives draw for the most part on conventionalised metaphors. In the portrayal of male characters, thoughts about past and future are expressly located in the character's head ('a memory lingered in his head'; 'the most romantic plans raced through his head'), and rational behaviour is described in terms of body temperature ('he kept his mind cold'). In the portrayal of female characters, metaphors and embodied cognition usually signal some degree of uncertainty: the character 'did not believe her ears' or 'did not trust [somebody] half an inch'. On the one hand, the low

groundedness of these codes prevents us from generalising differences in the portrayal of male and female characters. On the other hand, these results might help to trace text features for analysis in future research.

While there were no significant differences in terms of the types of emotions retrieved, there were subtle differences in frequency – and one difference in frequency that was not so subtle. Even though male characters experienced primary emotions (EMO M1) only 1.33x more often than their female counterparts, they experienced fear (FEAR) 2.5x more often. Moreover, while female characters' fear was conveyed with such expressive terms as 'dread' and 'terror' (hrůza, děs), the tendency for male characters was to convey this feeling more neutrally as 'fear' (strach; cf. Červená et al., 2006).

However, in the portrayal of male characters, fear was also the emotion most often described by means of metaphorical expressions (METAPHOR), namely the urge to move ('he took to his heels'), or – more frequently – the inability to move ('he looked frozen/stock-still'), and sensations of cold ('the blood in his veins ran cold'; 'shivers down his spine', 'heart shivering with fear'). Also frequent are metaphors referring to human internal organs ('heart in his throat'). With female characters, by contrast, metaphorical descriptions of fear tend to relate to the colour of skin ('she turned pale as chalk'), and not the inside of the body. It can be argued that the experience of fear as it is portrayed in the case of male characters is either milder thanwith their female counterparts, or else it is implied through various bodily states.

To further investigate the various forms by which emotions are expressed through the body, we chose a relatively frequent code: CRY. In our text sample, the code appears 6 times in female characters and 7 times in male characters, suggesting there is only a slight difference in the relative frequency of the code between male and female characters (appearing with slightly higher frequency for female characters). Examining the relevant quotations, an interesting difference emerges: while crying among male characters is predominantly described by the words brečet and brekot, which are colloquial and expressive, the crying of female characters is described – with one exception – by the more neutral plakat (cf. Červená et al., 2006; Machálek, 2019). This suggests that crying for male characters is more symptomatic than for their female counterparts. Other comparisons of the portrayal of emotions among male and female characters, especially as this involves parts of the body, reveal more similarities than differences.

To sum up our findings: in spite of annotating those texts which portray complex male and female characters, we find striking disproportions in our sample between the number of female cognitive and emotional instances with comparison to that of their male counterparts.

Furthermore, we observe a tendency to emphasise the emotional and cognitive instances of only one gender, the texts thus creating distinctively male-centred and female-centred story worlds. By contrast, looking at the quality of cognitive and emotional instances, differences in the portrayal of male and female characters are relatively unpronounced. However, the diverse nature of our text sample and low representation of female inner-state instances leads us to conclude that without a larger data set all comparison between female- and male-related codes remains tentative.

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4. Case Studies

To provide nuanced examples of predominantly male- and female-centred narratives while continuing to tap the potential of software-assisted analysis, we will now move on to two case studies. Each of the following excerpts was written by a prolific female author: Astrid Lindgren and Ivona Březinová, respectively. Both authors appeared among the top four positions in our full corpus (*N* = 530) in terms of frequency (Segi Lukavská & Kuzmičová, 2022). Astrid Lindgren is a globally famouswriter (and her *Pippi Longstocking* series a venerated classic); Ivona Březinová is a contemporary Czech author, whose books have been translated into English, Spanish, and Polish. Both authors show considerable disproportion between male and female characters with regard to the portrayal of their inner states. However, while Lindgren's *Pippi Longstocking* favours the portrayal of female inner states, Březinová's *A Boy and His Dog* includes predominantly male cognitive and emotional instances.

The excerpt from *A Boy and His Dog* tells the story of nine-year-old boy Julin who suffers from a progressive disease that compels him to use a wheelchair. As argued in Segi Lukavská & Kuzmičová (2022), while the excerpt portrays complex cognitive and emotional states on the part of both male and female characters, female cognitive and emotional states are not nearly as rich as that of their male counterparts.

The annotation shows that male characters' experience three times as many inner-state instances as female characters do (see Table 1 above), with the disproportion especially pronounced in the portrayal of cognitive states. While male characters are depicted primarily through cognitive processes, even in those passages which deal with emotionally challenging situations (18 cognitive instances compared to 8 emotional instances), female characters

experience more emotions (5 instances) than cognitive states (4 instances). This disproportion cannot be straightforwardly explained with reference to the different numbers of male and female characters: in the excerpt, two boys (Julin, Mirek) and two girls (Dana, Ilča) appear, with a brief appearance of Julin's father and mother. Let us illustrate the gender-polarisation of the text with the following passages. (Examples from *A Boy and His Dog* have been translated from the original Czech into English by the authors of this study.)

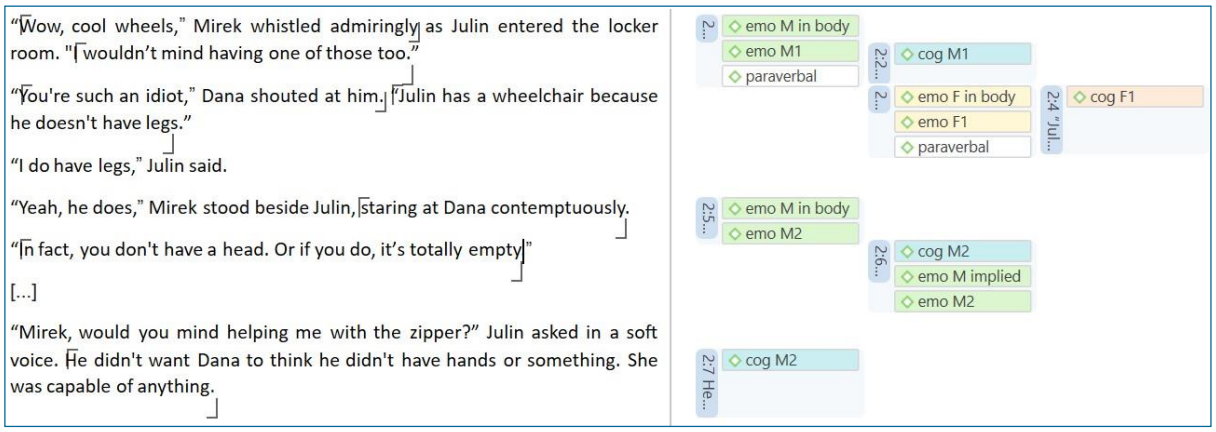

Figure 2. A passage from the excerpt *A Boy and His Dog* in Document manager**.**

In Fig. 2, a passage taken from the middle of the excerpt, Dana, the first female character appears and initiates the first conflict in the story. Her appearance is easily traceable through the colour of the codes in the right panel. Her intentions and motivations are not obvious to the reader, yet it is made clear that she stands in opposition to Mirek, Julin's friend. Dana's distance from both male characters is demonstrated paraverbally, namely through her shouting, while Mirek supports Julin not just by admiring his whistling but also by drawing closer to him.

Characterised by just one lower-order cognitive instance and one primary emotion, Dana remains a flat character, while Mirek and Julin are more extensively developed by comparison. Reading each other's minds, Julin and Mirek forge a bond of friendship, while Dana becomes an outsider in the situation – indeed, an object of Julin's thoughts who ceases herself to experience any further inner states.

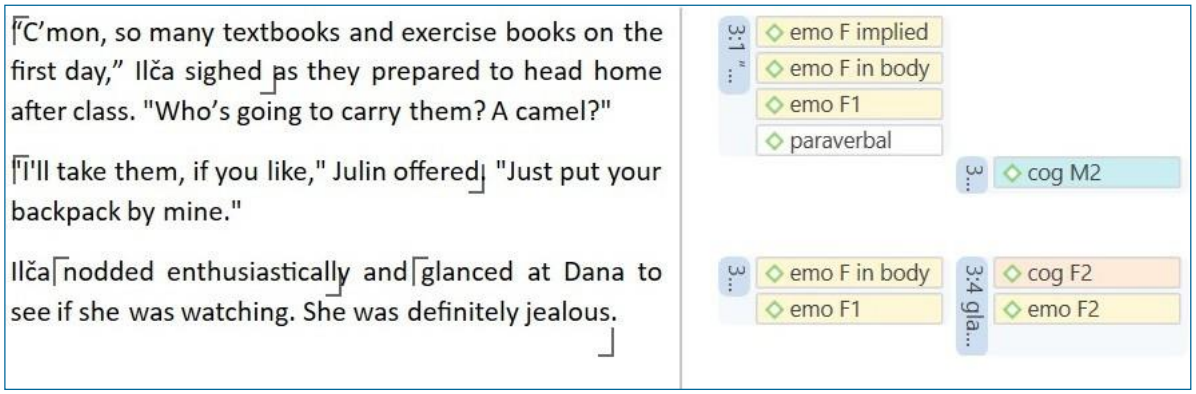

Figure 3. A passage from the excerpt *A Boy and His Dog* in *Document manager*.

In Fig. 3, a second female character, Ilča, enters the scene. Unlike Dana, she is portrayed with a higher-order cognitive instance and a secondary emotion. Notably, these thoughts and feelings are directed towards Dana. Even though we are given to understand, that she is a friend of Julin, in the passage where we get direct access to her motivations, she relates herself to Dana, while male characters are portrayed as developing implicit commonalities in a kind of 'boys' club'. Moreover, while male relationships are depicted as cooperative, the female relationship tends to be competitive.

To sum up, gender imbalance is manifested not just in the male-to-female ratio of inner states, but also in the quality and variety of these inner states and character relations these inner states express.

However, we found a rather unique case in the excerpt of a female-centred text – *Pippi Longstocking* – where the disproportion between male and female inner-state instances did not, in fact, entail a stereotyping of the male character. In this excerpt, female characters are ascribed approximately 2x more inner states than their male counterparts (cf. Table 1 above). Nonetheless, as we would like to show in the two figures below, male and female characters are portrayed in the same depth, in spite of this disproportion in the number of emotional/cognitive instances.

For the purposes of this article, the figures below refer to an English translation of *Pippi Longstocking* by Tiina Nunally (Lindgren, 2007).

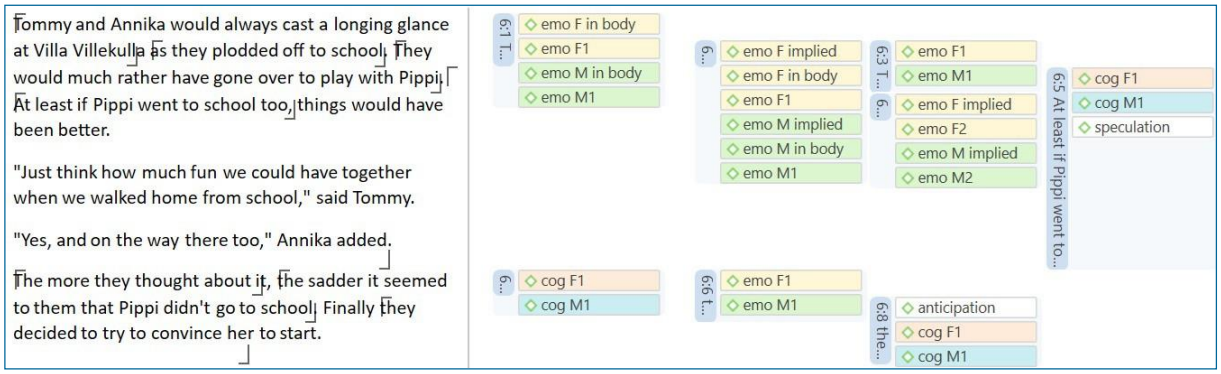

Figure 4. A passage from the excerpt *Pippi Longstocking* in *Document manager.*

While walking to school, Tommy and Annika experience a wide variety of emotions and cognitive states, conveying that they would both rather spend time playing with Pippi. The feeling leads them to imagine how much better it would be if Pippi joined them in school. Sharing the fantasy with each other and becoming more absorbed in it, their sadness grows. Finally they come to the conclusion that they have to persuade Pippi to join them, gradually turning their attention from themselves to Pippi.

Later, Tommy and Annika try to lure Pippi into coming to school by emphasising its appealing aspects. However, seeing that Pippi does not respond to these efforts, they change their tactics to what they imagine to be a more effective approach.

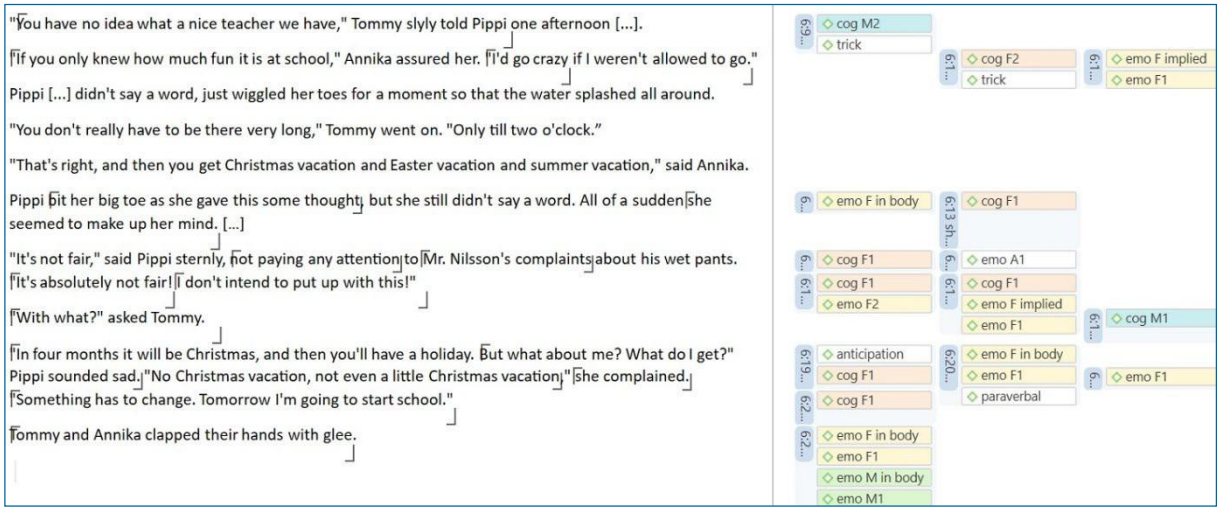

Figure 5. A passage from the excerpt *Pippi Longstocking* in *Document manager*

In their efforts to convince Pippi to join them in school, Tommy and Annika come to adapt their assumptions about what makes a strong argument, particularly for Pippi. Trying to read Pippi's mind, they stop praising school and point out instead that one does not have to stay very long

each day, and that there are various vacations. Pippi accepts this absurd reasoning, expressing outrage that, not going to school, she does not get any vacations. Afterward, just like Tommy and Annika before her, she goes from frustration to decisive action. While Tommy and Annika achieve their goal, readers will understand the underlying irony.

Looking at these two passages, we can identify several factors which make this excerpt relatively gender-balanced, albeit disproportionate in terms of the number of annotated emotional/cognitive instances. One important factor may be the distribution of the protagonists' roles. Pippi's utterances (and later in the story the teacher's) are a main factor in the numerical dominance of female emotional and cognitive instances in the anthology excerpt as a whole. However, Tommy is certainly not depicted as a flat character. His representation as someone who transforms his thoughts, wishes, and various feelings into a plan for changing Pippi's attitude toward school, clearly conveys an ability to recognise his own emotional needs while simultaneously think about the needs of others. Finally, the excerpt shows his agency: his determination to act on his thoughts and feelings.

Even more importantly, in this excerpt, Tommy and Annika share a common goal, joining forces to achieve the desired result, which seems to make their similarities more relevant than their differences. This sharing of inner states is clearly manifested in the *Document manager* mode in Atlas.ti, with the same types of codes appearing side by side in male and female characters. Moreover, the portrayal of inner states as experienced by Tommy and Annika also develop along the same path; their primary emotions evolve into secondary emotions, and their speculations turn into higher-level attempts to manipulate Pippi by adapting to her responses. In Figs. 4 and 5, this is manifested in the sequence of codes that appear in the right panel of the *Document manager*.

5. Conclusion

Over the past decades, researchers from various fields have argued that the underrepresentation of certain types of characters in literary and curricular texts can negatively impact children's socialisation and self-image. Therefore, they call for maximum character diversity in children's reading (Adam and Harper, 2021; Bishop, 1990; Kucirkova, 2019). However, we argue that the sheer number of male and female characters is not a sufficient criterion in selecting texts for use in educational settings; it is critical that all categories are represented by full-fledged, round characters.

In this article, we examined the ways female and male characters' emotional and cognitive states are portrayed in children's reading anthologies, while developing an innovative text-

analytical, software-assisted approach. We annotated the data of 44 narrative excerpts, focusing on different types of emotional/cognitive instances primarily in terms of their complexity, explicitness/implicitness, and embodiment. Our analysis demonstrated theunderrepresentation of female inner states in the selected reading anthologies, and this in spiteof a purposeful sample of excerpts in which both male and female characters are portrayed as complex. The low number of cognitive instances in female characters is especially striking.

When Forni (2020, p. 65) takes up the issue of female character representation in literary texts, she argues that from a quantitative viewpoint, 'relevant' (active, developed) female characters tend to be underrepresented in children's books, but also that 'from a qualitative point of view, boys and girls are described as opposite extremes with fixed, standard identities that cannot be confused or mixed. For instance, male and female characters are characterised by different adjectives and personalities, different career opportunities, *different spaces* where they act' (italics ours). As we have shown here, our data confirms the lack of 'relevant' female characters, assuming that a character must be portrayed as experiencing a variety of emotional and cognitive states to be relevant to (young) readers, who might use these inner states as a foundation on which to build their empathy skills.

However, our data also demonstrates relatively little difference between male and female characters in the types of emotional and cognitive states they experience, or the ways they embody them. The notion of 'different spaces' in the context of our study refers rather to the various mutually isolated texts that male and female characters occupy: that is, the respective numbers of male and female inner-state instances in texts revealed that most excerpts were either strongly female- or male-centred. Teachers and other practitioners working with children should consider not just whether they select texts with full-fledged male *and* female characters in similar proportions. Ideally, they should pay attention to whether the texts show male and female characters as sharing the same (text) world.

Across all our text subsamples (male-centred, female-centred and balanced), we found that the ratio of male characters' emotional to cognitive instances remains approximately the same, and that the inner life of male characters tends to be portrayed more frequently by cognitive than emotional instances. The portrayal of female characters, by comparison, tends to vary across the subsamples. However, with the exception of female-centred texts, female characters are depicted more frequently through emotional than cognitive instances, which suggests that the female characters in our sample may be perceived as more 'emotional' and less 'rational' than their male counterparts and may reinforce the stereotype of women as more emotional than

men (Nesbitt and Penn, 2000). Notably, genre seems to play an important role in this, which may serve as a useful cue when pre-selecting texts for educational use.

At the same time, as we demonstrated in our case studies, quantitative analysis of inner-state instances should be supplemented by careful observation and interpretation in the context of individual texts. In our case studies, *A Boy and His Dog* served as an example of a gender-polarised text in which the disproportion in the number of inner states experienced by male and female characters is a reliable sign of the gender imbalances of the text in general. The female-centred excerpt from *Pippi Longstocking,* on the other hand, appears to be exceptional in relation to our sample. In *Pippi*, the underrepresentation of male inner-state instances does not imply emotional and cognitive underdevelopment of the male character.

By making use of Atlas.ti in our analysis of reading anthologies, we were able to examine a middle-size corpus in a way that is similar to literary analysis, but to do so more efficiently, and without first learning specialized IT skills. As for the limitations of our approach, as we found out during data processing in Atlas.ti, we would need to start with a larger sample of texts to deal in more detail with the differences in the quality of male and female inner state types. Especially as regards the underrepresented female characters, the number of individual emotional and cognitive types is too low to draw conclusions. However, as shown above, using Atlas.ti for the analysis of a middle-size corpus has given us valuable suggestions on which phenomena (such as the depiction of male and female characters experiencing fear) are potentially worth exploring with a larger text corpus.

Moreover, applied on texts which vastly differ in length, genre, or author style, our procedure proved useful for analyses of diverse sets of texts – during the coding process, researchers can proceed bottom-up, setting up new codes or merging and re-grouping the established ones. The procedure helps to find meaningful similarities as well as idiosyncrasies of individual texts and thus can be fruitful even for analyses outside the educational contexts.

In conclusion, teachers who strive to include texts with diverse characters in their literary classes should also pay attention to whether and how these characters are portrayed as experiencing various inner states.

In conclusion, teachers who strive to include texts with diverse characters in their literary classes should also pay attention to whether and how these characters are portrayed as experiencing various inner states. In this regard, it is also worth considering whether the texts portray well-rounded characters of different types, or whether instead they paint pictures of rather separate male-centred and female-centred worlds.

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