An Analysis of Dissertation Abstracts Written by Non-native English Speakers at a Serbian University: Differences and Similarities Across Disciplines

Check for updates

Marina Katic and Jelisaveta Safranj

Abstract This paper deals with functional variation of language in the scientific context. The research was performed using a corpus of abstracts across various disciplines from the Digital library of the University of Novi Sad. The lengths, kinds, frequencies, and positions of moves applied in the selected abstracts were examined. Differences and similarities of moves between different scientific areas were identified and discussed. The employed methodology consisted of Hyland's (Disciplinary discourses: Social interactions in academic writing. Longman, London, 2000) five-move model, including the move recognition criteria. Findings showed optional structures, which indicated differences among various disciplines. There were also some similarities, such as cycled patterns, that were influenced by Serbian cultural conventions. Examining the linguistic properties of dissertation abstracts can help teachers to improve their learning methods in English for specific purposes by extending the range of their pedagogical material in the domain of contemporary academic writing.

Keywords Dissertation abstracts · Moves · Different disciplines

1 Introduction

When completing their PhD dissertations, all candidates from the University of Novi Sad must write an abstract in both the English and Serbian languages. Since writing a PhD dissertation is done only once in one's whole life, it is a great challenge for any postgraduate student to prepare a well-structured abstract that can enable the reader to identify the basic content of a research work in order to determine its relevance for further reading. Having in mind the importance of English for scientific purposes, this paper focuses on dissertation abstracts written in English. For this purpose, there is a standard model for abstract creation that can be found in

M. Katic (✉) · J. Safranj
Faculty of Technical Sciences, University of Novi Sad, Novi Sad, Serbia
e-mail: mare@uns.ac.rs; savetas@uns.ac.rs

the on-line guidelines in the Serbian language (Univerzitet u Beogradu 2014) that indicates that an abstract should be brief and generally state the principal objectives and scope of the investigation, including methods, results, and conclusions. It is assumed that all PhD candidates are familiar with its content since it is available online. The goal of this study is to examine dissertation abstracts across unrelated disciplines in an attempt to identify the similarities and differences between them regarding abstract rhetorical moves. Swales (2004) defined a *move* as "a discoursal or rhetorical unit that performs a coherent communicative function in a written or spoken discourse" (p. 228). A more detailed definition was made by Nwogu (1991) who apart from defining move as "a text segment made up of a bundle of linguistic features" introduced the term *submove*, "which combine to constituent information in the move" (p. 114).

Focusing on abstract moves, this paper aims to enrich the domain of academic writing, especially abstract writing for scientific purposes.

2 Move Structure Analysis

Owing to international recognition in the field of science and engineering, academic English has become important for both researchers and PhD candidates, either native or non-native speakers, whenever they wish to write a research article or dissertation and in order to keep abreast with the latest developments in their disciplines. Any scientific publication usually contains an abstract, which is a short review of the work at hand and which many famous linguists have tried to define. Bhatia (1993) explained that "an abstract, as commonly understood, is a description or factual summary of the much longer report, and is meant to give the reader an exact and concise knowledge of the full article" (p. 78). In spite of their traditional purpose to summarize research articles, abstracts have become crucial for readers in their decision process of reading the text further. In that sense, it is stated that "the abstract that accompanies research articles and dissertations is a notable practice in academic research as it constitutes a gateway to the reading or publication of a research article or a thesis" (Lores 2004, p. 281). Furthermore, it saves time by "informing the reader about the exact content of the article, indicating whether the full text merits their further attention" (Martin 2003, p. 26). Due to abundance of recent scientific publications in various domains, a good basis for linguistic investigation has been established to support further analysis from different points of view. Accordingly, it is not surprising that differences and similarities of abstracts across disciplines have attracted particular attention. Al-Ali and Sahawneh (2011, p. 9) gave a comprehensive review of researchers, emphasizing that Melander et al. (1997) detected different overall organization between linguistics and biology abstracts produced in the American context, while Stotesbury (2003) even revealed that the appearance of evaluation attributes in humanities and social science abstracts is twice as common as it is in natural sciences.

It is also worth mentioning that dissertation and research article abstracts are recognized as a genre by contemporary linguists. Indeed, Swales and Feak (2009) defined it as "a type of text or discourse designed to achieve a set of communicative purposes" (p. 1). A genre is mainly described in terms of its rhetorical structure, i.e., its constituent moves. In that sense, there have been several proposed models throughout the language history.

Genre analysis has been greatly influenced by John Swales's (1990; see also chapters, "Reader Versus Writer Responsibility Revisited: A Polish-Russian Contrastive Approach", "Research Articles as a Means of Communicating Science: Polish and Global Conventions" and Individual Differences and "Micro-Argumentative Writing Skills in EFL: An Exploratory Study at a Hungarian University") Creating a Research Space (CARS) model for research article introductions, which consists of the following three moves, each one including the following steps:

Move 1: Establishing a territory: Claiming centrality, making topic generalization, reviewing items of previous literature
Move 2: Creating a niche: Counter-claiming, indicating a gap, question raising, continuing a tradition
Move 3: Occupying the niche: Outlining purpose or announcing present research, announcing principle findings, indicating RA structure (p. 141)

In general, this model was created to present the current situation in a particular scientific discipline, indicate a problem, and give a solution.

The most-cited model is Bhatia's (1993, p. 78), a four-move model, in which an abstract gives information on four aspects of the research article it is describing: (1). what the author did, (2). how the author did it, (3). what the author found, and (4). what the author concluded. The following moves are included:

1. Introducing the purpose
2. Describing the methodology
3. Summarizing the results
4. Presenting the conclusions

On the other hand, "some researchers found that Swales and Bhatia's models did not contain all the component moves found in the data analyzed" (Al-Ali and Sahawneh 2011, p. 13) in that numerous texts were found to include some additional component moves that have not been identified by the above-mentioned models.

Subsequently, a more extended model appeared: Hyland's (2000) model of research article abstracts, which includes five moves: introduction, purpose, method, product, and conclusion (p. 6), referred to here as M1, M2, M3, M4, and M5.

The functions of the moves and their constituent steps are precisely presented by Li (as cited in Saboori and Hashemi 2013, p. 486):

1. **Introduction** (Establishes the context of the paper and motivates the research.)

Step 1. Arguing for topic prominence
Step 2. Making topic generalizations

Step 3. Defining terms, objects, or processes
Step 4. Identifying a gap in current knowledge

2. **Purpose** (Indicates purpose, thesis, or hypothesis and outlines the intention behind the paper.)

Step 1. Stating the purpose directly

3. **Method** (Provides information on design, procedures, assumptions, approach, data, etc.)

Step 1. Describing the participants
Step 2. Describing the instruments or equipment
Step 3. Describing the procedure and conditions

4. **Product** (States main findings or results, the argument, or what was accomplished.)

Step 1. Describing the main features or properties of the solution or product

5. **Conclusion** (Interprets or extends results beyond the scope of the paper, draws inferences, and points to applications or wider applications.)

Step 1. Deducing conclusions from results
Step 2. Evaluating value of the research
Step 3. Presenting recommendations

In addition, Li stressed that contrary to the Bathia's model, this new framework for abstracts distinguishes its purpose from the introduction, because it has a different role from the typical aim of introduction, which is to provide a justification for the research. Consequently, the purpose move is created to indicate the purpose, thesis, or hypothesis, which is the main argument of a dissertation. Furthermore, in this framework a product move is adopted instead of the result move, taking into account Hyland's (2000) explanation that this move can better account for abstracts from social science fields, sometimes including not only a statement of empirical results but also a statement of the argument (Saboori and Hashemi 2013, p. 486). Among other things, this is why the authors considered it relevant for this study.

3 Research Methodology

The corpus of this study consisted of 12 dissertation abstracts, covering different scientific fields, randomly retrieved from the Digital Library of the University of Novi Sad. Indeed, it is the current practice of our university to keep and display scientific contributions in electronic form. As a result, all the dissertations used for abstract selections were available as public theses (in Serbian: *Doktorske disertacije stavljene na uvid javnosti*) from 29 December 2013 to 28 January 2014, meaning that all abstracts were available online for a period of 1 month. After collecting the entire corpus, the abstract from each text from the related discipline was assigned a

UNS Digital library identification number and the word count of each abstract was done by computer. The procedure of the research methodology consisted of Hyland's (2000) five-move model for studying structures and functions of abstracts. It also included key steps in developing the move recognition criteria, which are usually considered unavoidable in this type of research. In other words, during the rhetorical move analysis, we noticed that the majority of abstract moves were represented either by one sentence or more, while in particular cases, two or more moves were simultaneously embedded in one sentence. Being aware that identifying move borders is a difficult task to accomplish, the authors decided to follow two criteria. The first, or formal linguistic criterion, was based on separation of the abstract content into individual sentences, and the second was based on Ackland's (2009) "top-down" and "bottom-up" approach. In order to avoid subjectivity in the analysis, the move recognition and the setting of move borders were done by two raters (a PhD researcher from the Faculty of Philosophy at Novi Sad and a PhD researcher from the Faculty of Technical Sciences at Novi Sad) and the authors themselves. In this respect, all arising disagreements during the annotation process were solved through fruitful discussions until reaching mutual consent. In addition, for the purpose of this analysis, the authors prepared a table with nine columns representing disciplines as recognized by the University of Novi Sad, including ID number of the abstract, the total number of words, individual inclusion or omission of a move, and an indicator for the position of each move. In addition, the authors used Kanoksilapatham's (2005) criteria for justifying and classifying the frequency of each move. In this respect, a move is regarded as "obligatory," if it occurs in 100% of abstracts, "optional" if the occurrence of a move is below 60%, and "conventional" if the occurrence ranges from 60 to 99%.

4   Data Analysis

In order to identify moves, the authors adapted a framework for data analysis based on the assumption that each move may consist of either one or more sentences or at least a clause or phrase. In other words, each sentence of an abstract can be assigned to one move, but frequently a longer sentence can be marked as two different moves or entities. This practically means that from the aspect of move structure, one or several sentences can produce an independent move, while on the other hand, a longer sentence can produce several embedded moves composed of either clauses or phrases. However, the authors gave advantage not to structural or grammatical characteristics but to the semantic property of each move, due to its importance for the interpretation of the whole abstract. Indeed, the idea was to analyze all moves on equal footing, regardless of their form. Therefore, in this analysis both *independent moves* and *embedded moves* are treated equally, as if they belong to the same grammatical category. In this respect, the authors divided the 12 academic abstracts from different disciplines into two sections:

Table 1 Move recognition and setting of move borders according to Hyland's (2000) model in Sect. 1

Discipline	Sentence containing independent move	Moves according to Hyland's (2000) model	Procedure 1 move-recognition criteria	Procedure 2 move-recognition criteria
Automation and control systems	*The thesis is dedicated to* development of the approach capable of providing timely and reliable information on technological parameters that represent important indicators of cement production process performance.	M1	Formal linguistic criterion	Bottom-up approach
Technological engineering	For these reasons, *the task of* this PhD thesis was to determine the impact of an integrated three most important seed quality factors in the overall quality of the produced cold-pressed sunflower oil.	M2	Formal linguistic criterion	Bottom-up approach

– Abstracts containing moves represented by one or more sentences: Sect. 1 (independent moves)
– Abstracts with longer sentences in which two or more moves have simultaneously been embedded: Sect. 2 (embedded moves)

Abstracts composed of both types of sentences were similarly evaluated, i.e., using the same criteria, depending on sentence structure and content. The first step (Procedure 1) in analyzing Sect. 1 was to separate the full text of abstracts into sentences. The second step (Procedure 2) was to perform the move recognition and the setting of move borders based on linguistic signals using the bottom-up approach (Ackland 2009). The examples in Table 1 illustrate Procedure 2, regarded as relevant for the move-recognition process. In this respect, phraseology such as "the thesis is dedicated to" and "the task of" was of great help to identify the move according to Hyland's (2000) model.

On the other hand, special attention was paid to abstracts containing sentences in which two or more moves have simultaneously been embedded, i.e., Sect. 2, presented in Table 1. In the first example, the bottom-up approach was applied, since the linguistic signal "with the aim to" was recognized. In the second example, in the absence of linguistic signals, a semantic criterion based on the content of the abstract was used through the top-down approach (Ackland 2009).

Having analyzed examples from Table 2 the authors realized that in both cases there was a need to separate a relatively "lengthy" sentence structure into smaller units in order to determine different moves. This was in congruence with Samraj's (2005) assertion that "a sentence may sometimes be a realization of more than one move" (p. 146) as well as Santos' (1996) reference to embedded moves as "a hybrid

Table 2 Move recognition and setting of move borders according to Hyland's (2000) model

Discipline	One sentence with more than one move	Moves according to Hyland's (2000) model	Procedure 2 move-recognition criteria
Biotechnical sciences	Bio-pomological properties of highbush blueberry cultivars grown under the agro-environmental conditions of Western Serbia over 2008–2010 were examined *with the aim to* recommend them for introducing into production.	M1 and M2	Bottom-up approach
Electrical engineering	Procedure of controllers development was presented through development and testing of one new control algorithm for connecting the permanent magnet synchronous generator to the electrical grid.	M3 and M2	Semantic criterion/ Top-down approach

move" (p. 492). Indeed, both examples contain merging of moves associated with different sentence functions. The first example demonstrates blending of M1 and M2 (introducing the context of the dissertation together with its purpose), while the second one illustrates blending of M3 and M2 (explaining methodology and indicating purpose, including move reversal). However, in these particular cases, the problem arose in regard to setting of move borders, because it was difficult to categorize each move. Relying on both Samraj's (2005) and Santos's (1996) remarks, the authors agreed to categorize an embedded move as inclusion of a move through embedding, aiming to indicate that such a move, being a part of the "hybrid move," should be treated on an equal footing with an independent move. For practical purposes, both embedded moves were recognized as entities due to the importance of their semantic properties.

By defining the framework of the data analysis, the authors provided a firm basis for further investigation in regard to rhetorical move-structure analysis. Next, the abstract moves were analyzed according to the proportion of each individual move inclusion across disciplines and adherence of each individual discipline to Hyland's (2000) five-move model norm.

5   Results and Discussion

Over the last two decades, the writing of doctoral theses has attracted the growing attention of numerous linguists (Dudley-Evans 1999; Cooley and Lewkowicz 2003; Paltridge and Starfield 2007; Bitchener 2010; Al-Ali and Sahawneh 2011), who have tried to explain how language is used in such a specific context. Most of them have recognized the linguistic demands for widening knowledge in rhetorical characteristics and typical text features of dissertation abstract moves, hoping that their research implications could be of great help to PhD candidates when expressing their innovative ideas in such a condensed form.

The increasing importance of abstracts in academia motivated the authors to explore the lengths, kinds, frequencies, and positions of the moves in the selected abstracts across disciplines. Accordingly, the corpus of the analysis included a variety of scientific disciplines: mathematics, music theory, medicine, automation and control systems, electrical engineering, biotechnical sciences, geography, technological engineering, history, biotechnology, food biotechnology science, and geodesy.

The authors decided to follow Hyland's (2000) five-move model in their analysis due to its comprehensiveness. In addition, the authors noticed that this model was supported by the guidelines for writing abstracts (in Serbian: *Uputstvo za izradu doktorskih disertacija*) available online from their university. In this respect, a rhetorical move structure analysis was conducted in order to identify the variations of dissertation abstracts in terms of move structure presence or absence across 12 disciplines. Table 3 shows the lengths of the abstracts and the kinds and frequencies of moves in each of the disciplines, including their position, based on Hyland's (2000) move structure model. As presented, the lengths of the dissertation abstracts ranged from 50 to 595 words.

The five detected moves were introduction, purpose, method, product, and conclusion. It is worth mentioning that most of the moves in the present corpus were explicitly announced by certain lexical signals. In that sense, lexical expressions such as "in this doctoral thesis" or "the thesis is dedicated to" are used as a clue to signal the introduction move. Likewise, "the aim" or "objective of this thesis" indicated the move of purpose, whereas "using this method" or "the methodology presented" marked the move of illustrating methodology. Lexical phrases such as "the results show" or "indicate" suggested the results move. Furthermore, the move of expressing conclusions was usually announced by "it can be concluded."

The introduction move was present in all 12 (100%) of the examined dissertation abstracts (see Fig. 1a), thus it can be considered an obligatory move. We surmised that the majority of the PhD candidates from the University of Novi Sad, being non-native English speakers, followed the practice of traditional academic writing in the Serbian language, which insists on the obligatory status of this move due to its purpose in justifying the study and determining the appropriate context, which avoids wider promotion of the research work. In other words, the Serbian cultural norms significantly influenced the way these dissertation abstracts were composed, as they advocate a roundabout way of expressing innovative ideas. It is apparent that most of these dissertation writers represented current knowledge and provided detailed information of previous research. By respecting these move requirements, they expected to arouse sufficient interest in the matter, but they neglected other moves. It is interesting to note that this move appeared as a starting point in 10 instances out of 12. The findings revealed that there were two instances of move embedding, where the purpose move preceded introduction move and five instances of move embedding (M1-M2) with standard move order, which will be discussed in detail below.

The purpose move, intended to present the goals of the study, is considered to be an essential component of experimental-empirical scientific papers (Endres-Niggemeyer 1998, p. 107). In most of the abstracts examined that were from these disciplines, it followed the introduction move, but in some instances, such as in the history discipline, it opened the abstract in order to describe the key features of the

Table 3 Move analysis based on Hyland's (2000) five-move model

Discipline & Abstract Code	Abstract length/Total number of words	Move 1 Introduction/ Inclusion or omission of Move 1	Move 2 Purpose Inclusion or omission of Move 2	Move 3 Methodology Inclusion or omission of Move 3	Move 4 Product Inclusion or omission of Move 4	Move 5 Conclusion Inclusion or omission of Move 5	Position of moves Hyland's move order or significant reordering of moves
Mathematics pdf&id = 1029	297	Inclusion	Inclusion	Inclusion	Inclusion	Inclusion	Hyland's move order
Music theory pdf&id = 1014	226	Inclusion through embedding (through Move 2)	Inclusion	Omission	Omission	Inclusion	Significant reordering of moves
Automation and control systems pdf&id = 2141	50	Inclusion	Inclusion through embedding (through Move 1)	Omission	Omission	Omission	Hyland's move order
Medicine pdf&id = 1005	326	Inclusion	Inclusion through embedding (through Move 1)	Inclusion	Inclusion	Inclusion	Significant reordering of moves
Electrical engineering pdf&id = 947	94	Inclusion	Inclusion through embedding (through Move 3)	Inclusion	Omission	Omission	Significant reordering of moves
Biotechnical sciences pdf&id = 977	224	Inclusion	Inclusion through embedding (through Move 1)	Omission	Omission	Inclusion	Significant reordering of moves

(continued)

Table 3 (continued)

Discipline & Abstract Code	Abstract length/Total number of words	Move 1 Introduction/ Inclusion or omission of Move 1	Move 2 Purpose Inclusion or omission of Move 2	Move 3 Methodology Inclusion or omission of Move 3	Move 4 Product Inclusion or omission of Move 4	Move 5 Conclusion Inclusion or omission of Move 5	Position of moves Hyland's move order or significant reordering of moves
Geography pdf&id = 990	237	Inclusion	Inclusion through embedding (through Move 1)	Omission	Omission	Inclusion	Hyland's move order
Technological engineering pdf&id = 3156	341	Inclusion	Inclusion	Inclusion	Inclusion	Inclusion	Significant reordering of moves
History pdf&id = 939	137	Inclusion	Inclusion	Omission	Omission	Inclusion	Significant reordering of moves
Biotechnology pdf&id = 938	406	Inclusion	Inclusion through embedding (through Move 1)	Inclusion	Inclusion through embedding (through Move 3)	Inclusion	Significant reordering of moves
Food biotechnology science pdf&id = 960	595	Inclusion through embedding (through Move 2)	Inclusion	Inclusion	Inclusion	Inclusion	Hyland's move order
Geodesy pdf&id = 2359	136	Inclusion	Inclusion	Omission	Omission	Omission	Hyland's move order

a

b
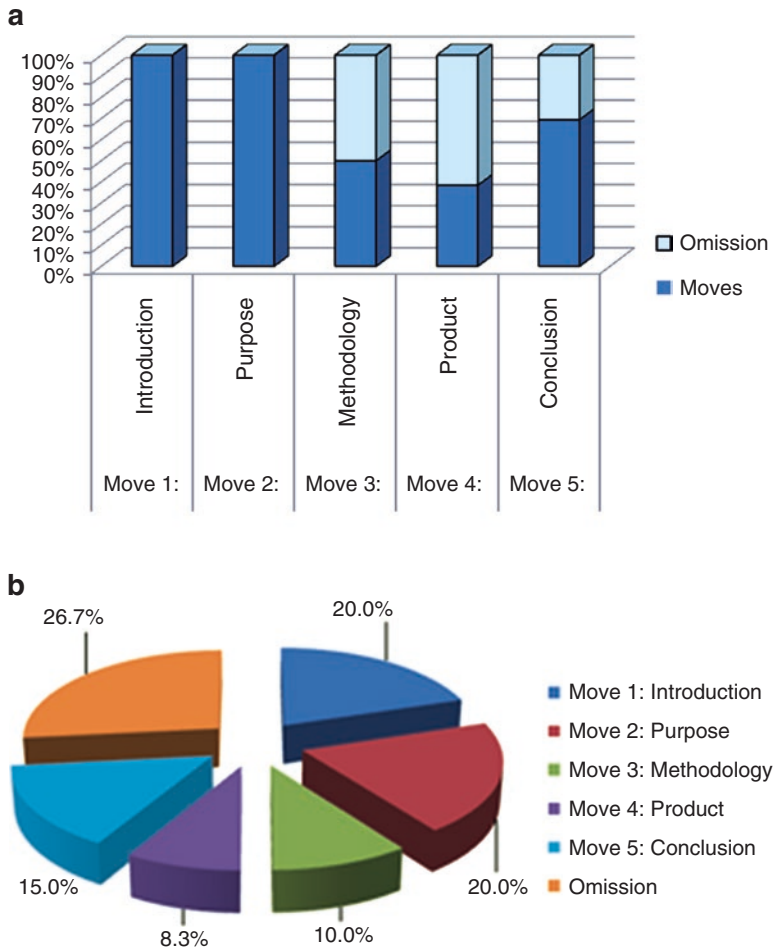
Fig. 1 (**a**) Frequency of moves according to Kanoksilapatham's (2005) criteria, (**b**) Frequency of the inclusions/omissions of moves across disciplines

research, pointing to the fact that it is of great importance for the whole content of the abstract. However, from a structural point of view, this move did not appear as an independent move in most disciplines but was combined with other moves. Consider the example below taken from the music theory discipline, where Move 1 also came after Move 2, confirming the previous observation regarding its tendency to be placed in front of the introduction move:

The aim of this thesis is to use the theory of musical gesture—the sonatas as a representative sample in which the basis for creating musical gesture meaning, generator of compositional form and structure, but also a determining factor of analysis that provides understanding of style and stylistic change—to confirm the use of musical gesture as an element of narratology of musical flow in the music by Prokofiev. (Univerzitet u Novom Sadu 2014)

This illustration reveals a linguistic phenomenon—move embedding—that has been a matter of debate among many famous linguists (Bhatia 1993; Santos 1996; Swales 2004; Pho 2008) since the second half of the twentieth century and was performed in an attempt to shorten the abstract, i.e., summarize what the dissertation thesis is about and what the writer's intention is. There were 7 such cases of move embedding, i.e., hybrid moves, reflecting a combination of M1 and M2, in the corpus of 12 abstracts, indicating that Serbian dissertation writers prefer merging this move with the introduction move rather than structuring it as an independent move. Further, an anomaly in M2 was detected in the corpus of the study regarding the reversed sequence of moves. Although the whole content of M2 was expected to be placed after the introduction move, in the biotechnical sciences discipline, it was suddenly divided into two separate parts. The first part of the content logically followed the introduction move, while the additional content of this move occupied the position after the methodology move, slightly decreasing reading comprehension.

On the contrary, the disciplines presented above showed variations in the use of the methodology move, which involves the description of the procedure or method. The writers in music theory, automation and control systems, biotechnical sciences, geography, history, and geodesy did not include it in the move structure, while the writers in other six disciplines insisted on this move, taking into account that it is rather important for achieving the goals of dissertation. Consider the following illustrative example of this move inclusion, signaled by "…method was introduced," found in the discipline of mathematics:

> The wave front tracking method was introduced in the fourth chapter. It was shown that, using this method, for sufficiently small initial conditions, it could be obtained a unique solution with bounded total variation for t ≥ 0. (Univerzitet u Novom Sadu, 2014)

Some methodology moves in this corpus, however, had to be identified by the top-down approach, which leads us to conclude that Serbian dissertation writers preferred describing methodology in their own words rather than using lexical signals for this move, as shown in the example taken from the discipline of food biotechnology science:

> The influence of the content of impurities is determined by pressing the starting material in which was not any impurities present, as well as materials in which the content of impurities was 5 and 10%. The influence of the shell content was investigated by pressing the starting material, without shell, that is the core, and the core with 16 and 32% of sunflower seed husks. (Univerzitet u Novom Sadu, 2014)

In addition, there was a low incidence of move embedding. Indeed, in the electrical engineering discipline, this move was merged with purpose move, while in the biotechnology discipline, the methodology move was combined with the product move, pointing out that both the purpose move and the product move were closely related to writer's experimental process. Briefly, on the basis of this analysis, Move 3, which actually indicates the procedure, analytical tools, and variables, i.e., the essential elements for regulating a related discipline, was not employed in 50% of the examined abstracts, indicating that it can be considered optional (see Fig. 1a). In other words, the Serbian dissertation writers probably assumed that the readers have

already gained background knowledge regarding the methodology performed, avoiding a detailed explanation of the procedure.

Surprisingly, the product move, designed to summarize the results, was not present in seven disciplines out of 12, although it is considered to be the most important one. The findings demonstrated a decreasing rate of interpreting results. Practically, this move was only included in mathematics, medicine, technological engineering, biotechnology, and food biotechnology. Indeed, based on this analysis, only 42% of the corpus included Move 4 (see Fig. 1a), suggesting that it was an optional move. It seems that Serbian dissertation writers are reluctant to share valuable information and knowledge with scientific community on a global level.

The conclusion move, in which a writer makes his/her final judgments about the thesis importance, is omitted in automation and control systems, electrical engineering, and geodesy. In most cases it was signaled either by "in this way" or "it is concluded," suggesting that writers tend to objectively report their findings. However, in some instances this move was recognized by the top-down approach due to absence of lexical clues, which might be ascribed to the lack of language skills. The results indicate that this move can be regarded as a compulsory move, since it was included in 75% of the cases from the corpus, as shown in Fig. 1a.

Concerning the position of moves, it is worth mentioning that seven (music theory, medicine, biotechnical sciences, electrical engineering, technological engineering, history, and biotechnology) out of 12 abstracts have significant reordering of moves, as indicated in Table 3. In other words, findings do not reveal that Serbian PhD candidates have a positive attitude towards this norm. This may be linked with their wish to reflect and promote a summary of dissertation content in their own authentic way. However, they have forgotten that prescribed language conventions could have enabled better reading comprehension, taking into account that accompanying English abstracts are used to show disciplinary research to a wider readership.

There is no doubt that length of the abstract affected the inclusion or omission of moves, which can primarily be seen in the discipline of automation and control systems (50 words), composed of only two moves instead of five. On the contrary, abstracts with considerably greater number of words, such as those from the discipline of medicine (326 words) or biotechnology (406 words), included all five moves. Further, assuming that there is a relation between the length and the persuasive quality of an abstract, which actually means that an abstract should not only be well formed but also short enough to attract and keep the reader's attention, the authors consider that only a small number of Serbian writers succeeded in fulfilling these requirements due to their reluctance to obey norms.

The results from the analysis of the frequency of the inclusions and omissions of moves across disciplines (see Fig. 1b) showed that the most employed moves were the introduction move (20.0%) and the purpose move (20.0%), while the least included one was the product move (8.3%), despite its relevance for scientific community. In addition, it was found that the methodology move (10.0%) and the conclusion move (15.0%) were moderately employed. This indicates that these moves, although not completely ignored, should be more widely used. On the other hand, considerable omissions of moves (26.7%) across disciplines were a matter of concern.

6   Focusing on Differences and Similarities

Considering the 12 disciplines together, the introduction move and purpose move were found to be the only obligatory moves that these disciplines share; the methodology move and conclusion move showed considerable variations, while the most omitted move across unrelated disciplines was the product move. This might be attributed to the previous long-term isolation of Serbia in all spheres of life, especially scientific research. In general, the authors attempted to reveal the distinctive features of abstract sections across disciplines according to Hyland's (2000) five-move model norm. Hence, the aim of this analysis was not only to point out significant differences among disciplines but also to demonstrate similar rhetorical structures through the phenomenon of cycling, i.e., reoccurrence of moves.

In this respect, the most preferred cycle was a M1-M2, following the traditional Serbian abstract-writing practice, while the second cycled one was M1-M2-M5, slightly extended. In this way, the most important similarities were revealed. This research also disclosed the considerable use of move embedding, i.e., hybrid moves. Out of the 12 disciplines, hybrid moves were noticed in nine instances, suggesting the strong preference of dissertation writers to merge moves, i.e., to combine two moves in one sentence in order to make the abstract more condensed. However, it is necessary to point out that move embedding and cycling were closely related in some instances from the corpus. Indeed, move cycling mostly occurred in an M1-M2 sequence as a consequence of frequently embedded moves (introduction and purpose moves), bearing in mind that it was found in the abstract structure of seven disciplines. On the other hand, the analysis showed that the most striking difference among disciplines lay in the occurrence of the product move. Although it is not common for disciplines in the field of natural sciences and humanities to avoid highlighting the results by using evaluative terms, M4 was the least frequent move in the corpus. The methodology move showed considerable variations, occurring in 50% of the examined abstracts (mathematics, medicine, electrical engineering, technological engineering, biotechnology, and food biotechnology science), which indicates that it is considered either relevant or peripheral, depending on writer's preference. However, Nwogu's (1997) move classification suggests that both M3 and M4 are to be called "normally required moves" as opposed to "optional" moves (p. 124). In other words, employing the introduction, purpose (considered obligatory), and conclusion (considered compulsory) moves without explaining the experimental process and revealing the results can somehow show that the writers are uncertain about the importance of their contribution, raising doubts about the quality and value of the whole thesis.

As already stated, there are strict norms concerning abstract writing, including among other things a clear plan in order to convey the full content of the writer's thesis. However, the findings reveal some surprising facts. Only PhD candidates in mathematics, medicine, biotechnology, and food biotechnology science relied on the strict move structure norm (introduction, purpose, method, product, and conclusion) that was available online, as opposed to other disciplines (music theory, automation and control systems, electrical engineering, biotechnical sciences, geography,
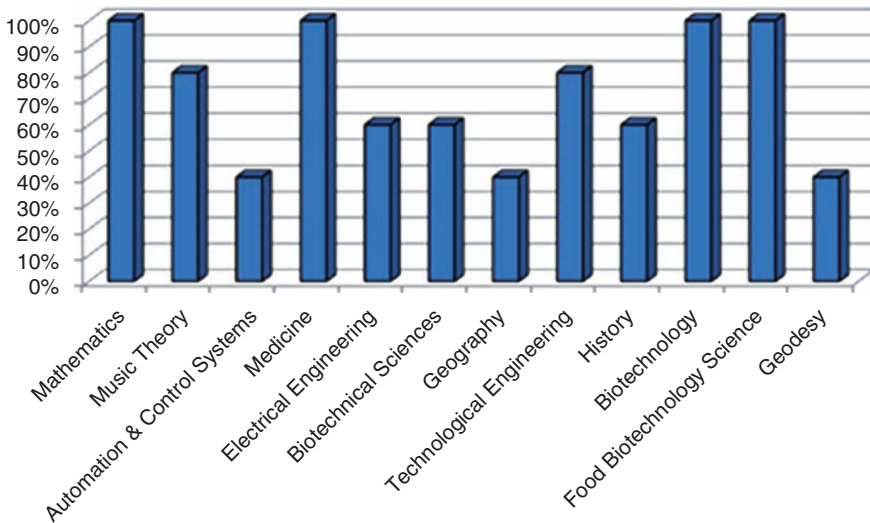
Fig. 2 Adherence of dissertation abstracts from unrelated disciplines to Hyland's (2000) move structure model

technological engineering, history, and geodesy), which failed to do so, neglecting some of the important moves. Shown in Fig. 2 are the different adherences to Hyland's (2000) move structure model: Not all moves were present in all the abstracts across disciplines. Although, it is difficult to determine the reasons that some moves were included while others were omitted, the authors aimed at finding the explanation in the profound disciplinary differences.

In the field of mathematics (100%), strict adherence to the abstract writing pattern might be attributed to the writer's way of thinking and reasoning in general, in that the goal of mathematics, as a branch of natural sciences, is to search out patterns to formulate new assumptions and provide order in nature. The authors posit that this is why the dissertation writer of this discipline respected the pattern and order in abstract writing. On the other hand, music theory is a discipline associated with creative thinking that involves hypothetical speculation about composing throughout the history of music. Accordingly, the lower frequency of move employment (80%) may be the result of the writer in this field avoiding using norms when writing the abstract for her thesis and seeking originality. However, there is no logical explanation for PhD candidates of other disciplines, particularly automation and control systems, geography, and geodesy, giving themselves the freedom to be remarkably distant from the established pattern for writing abstracts (see Fig. 2), since their related scientific fields are also based on natural sciences.

Taking into account Hyland's (2000) statement that an abstract is "critical to disciplinary knowledge-making and therefore to the work of academics" (p. 63), the "disobedient" dissertation writers should change their abstract writing practice considerably in order to indicate the expertise and correctness of their research. This is particularly important considering the great amount of endeavor and enthusiasm they put into writing their dissertations.

7 Conclusion

Having analyzed some dissertation abstracts across disciplines at the University of Novi Sad Digital Library in January 2014, the authors concluded that writing of dissertation abstracts depends more or less on the writer's own options, i.e., their preferences for which moves to include. The findings showed some similarities, expressed in the form of the M1-M2 cycle, based on Serbian cultural conventions, including the second-most preferred sequence, M1-M2-M5, which is a bit more modern. On the other hand, the most noticeable difference among disciplines was in the occurrence of the product move, while the most obvious variation was in the use of the method move. This points to the fact that Serbian academia failed to incorporate appropriate academic writing courses for postgraduate students across disciplines, which unfortunately resulted in variety of levels of adherence to the prescribed writing norm for abstracts. Although these differences and variations may be linked to explainable reasons, such as cultural conventions, the previous political isolation of Serbia, and even profound disciplinary differences, postgraduate students from the University of Novi Sad need help in realizing the importance of applying Hyland's (2000) five-move structure in their abstract writing. This model contains the most important information that should be placed at the potential readers' disposal. In other words, it is unacceptable to publish abstracts lacking important moves such as the product and the method. To achieve this goal, PhD candidates should be instructed on the conventional rhetorical structure of abstracts, helping them recognize the particular properties of the moves and their purposes, thereby revealing the mechanism that controls this specific genre and helping students efficiently adopt it. In this respect, the findings and their implications obtained on the basis of this relatively brief analysis may be used for further development of pedagogical activities in the field of academic abstract-writing practice. For instance, some future actions of the University of Novi Sad should involve organizing ESP courses and preparing specific instructions on language use in this demanding scientific discourse for particular fields of research. Indeed, the authors believe that Serbian postgraduate students will enjoy full international recognition in their related disciplines if they are given the opportunities to learn more about the rhetorical structure of dissertation abstracts and their important linguistic features.

References

Ackland, G. M. (2009). *A discourse analysis of English and French research article abstracts in linguistics and economics*. San Diego: Montezuma Publishing.

Al-Ali, M., & Sahawneh, Y. (2011). Rhetorical and textual Organization of English and Arabic PhD dissertation abstracts in linguistics. *SKY Journal of Linguistics, 24*, 7–39. Retrieved from http://www.linguistics.fi/julkaisut/SKY2011/SKYJoL2011_netti.pdf

Bhatia, V. K. (1993). *Analyzing genre: Language use in professional setting*. London: Longman.

Bitchener, J. (2010). *Writing an applied linguistics thesis or dissertation: A guide to presenting empirical research*. New York: Palgrave & Macmillan.

Cooley, L., & Lewkowicz, J. (2003). *Dissertation writing in practice: Turning ideas into text*. Hong Kong: Hong Kong University Press.

Dudley-Evans, T. (1999). The dissertation: A case of neglect? In P. Thompson (Ed.), *Issues in EAP writing research and instruction* (pp. 28–36). Reading: Centre for Applied Language Studies, University of Reading.

Endres-Niggemeyer, B. (1998). *Summarizing information: Including CD-rom "SimSum" simulation of summarizing, for Macintosh and windows*. Berlin: Springer.

Hyland, K. (2000). *Disciplinary discourses: Social interactions in academic writing*. London: Longman.

Kanoksilapatham, B. (2005). Rhetorical structure of biochemistry research articles. *English for Specific Purposes, 24*(3), 269–292. https://doi.org/10.1016/j.esp.2004.08.003.

Lores, R. (2004). On RA abstracts: From rhetorical structure to thematic organization. *English for Specific Purposes, 23*(3), 280–302. https://doi.org/10.1016/j.esp.2003.06.001.

Li, Y. (2011). *A genre analysis of English and Chinese research article abstracts in linguistics and chemistry*. Approved master's thesis, San Diego State University, CA.

Martin, M. P. (2003). A genre analysis of English and Spanish research paper abstracts in experimental social sciences. *English for Specific Purposes, 22*(1), 25–43. https://doi.org/10.1016/S0889-4906(01)00033-3.

Melander, B., Swales, J. M., & Fredrickson, K. M. (1997). Journal abstracts from three academic fields in the United States and Sweden: National or disciplinary proclivities? In A. Duszak (Ed.), *Cultures and styles of academic discourse* (pp. 251–272). New York: Mouton de Gruyter.

Nwogu, K. N. (1991). Structure of science popularization: A genre-analysis approach to the schema of popularized medical texts. *English for Specific Purposes, 10*(2), 111–123. https://doi.org/10.1016/0889-4906(91)90004-G.

Nwogu, K. N. (1997). The medical research paper: Structure and functions. *English for Specific Purposes, 16*(2), 119–138. https://doi.org/10.1016/S0889-4906(97)85388-4.

Paltridge, B., & Starfield, S. (2007). *Thesis and dissertation writing in a second language: A handbook for supervisors*. New York: Routledge.

Pho, P. D. (2008). Research article abstracts in applied linguistics and educational technology: A study of linguistic realizations of rhetorical structure and authorial stance. *Discourse Studies, 10*(2), 231–250. https://doi.org/10.1177/1461445607087010.

Saboori, F., & Hashemi, M. (2013). A cross-disciplinary move analysis of research article abstracts. *International Journal of Language Learning and Applied Linguistics World, 4*(4), 483–496. Retrieved from http://profdoc.um.ac.ir/articles/a/1038627.pdf

Samraj, B. (2005). An exploration of a genre set: Research article abstracts and introductions in two disciplines. *English for Specific Purposes, 24*(2), 141–156. https://doi.org/10.1016/j.esp.2002.10.001.

Santos, M. B. (1996). The textual organization of research paper abstracts in applied linguistics. *Text Interdisciplinary Journal for the Study of Discourse, 16*(4), 481–499. https://doi.org/10.1515/text.1.1996.16.4.481.

Stotesbury, H. (2003). Evaluation in research article abstracts in the narrative and hard sciences. *Journal of English for Academic Purposes, 2*, 327–342.

Swales, J. M. (1990). *Genre analysis. English in academic and research settings*. Cambridge: Cambridge University Press.

Swales, J. M. (2004). *Research genres: Explorations and applications*. Cambridge: Cambridge University Press.

Swales, J., & Feak, C. (2009). *Abstracts and the writing of abstracts*. Ann Arbor: University of Michigan Press.

Univerzitet u Beogradu. (2014). Uputstvo za izradu doktorskih disertacija. Retrieved from http://www.fpn.bg.ac.rs/studije-ii-i-iii-stepena/doktorske-studije/uputstvo-za-izradu-doktorskih-disertacija/

Univerzitet u Novom Sadu. (2014). Doktorske disertacije stavljene na uvid javnosti/Public theses. Retrieved from http://www.cris.uns.ac.rs/publicTheses.jsf