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Argument, Counterargument, and Integration? Patterns of Argument Reappraisal in Controversial Classroom Discussions

Being challenged by opposing views in a controversial discussion can stimulate the production of more elaborate and sophisticated argumentations. According to the model of argument reappraisal (Leitão, 2000), such processes require transactivity, meaning that students do not only give reasons to support their own position (e.g., pro/contra argument) but also try to refute the opponent's claims (e.g., counterargument) and respond to critique (e.g., integration). However, there is little research in the field of political education that systematically examines how processes of argument reappraisal unfold in student-centered classroom discussions when students were asked to defend (randomly) assigned positions (pro/contra). In this study, four civic education classes (8th/9th grade) in Germany received the same standardized political learning unit and conducted a controversial fishbowl discussion. A total of 452 argumentative moves were coded for argumentative transactivity. The characteristics of this type of discourse will be described regarding the use of argumentative moves and the complexity of argumentations. Explorative sequential analyses revealed five patterns of argument reappraisal that will be illustrated by transcript excerpts.

Keywords:

Argumentation, classroom discussion, controversy, transactivity, sequential analysis, discourse patterns

1 Introduction

This year's 40th anniversary of the Beutelsbach Consensus (1976), with its commonly accepted ethical guidelines for dealing with controversy in the classroom, brings to the foreground questions associated with discussions and debates in the classroom. The present paper deals with the interactional dimension of controversial discussions in German civic education classes (8th/9th grade, secondary school). Theoretically, it is based on the model of argument reappraisal (Leitão, 2000), which implies that critical evaluation of arguments requires interlocutors to give reasons to support their position (e.g., pro/contra argument), try to refute the opponent's claims (e.g., counterargument), and respond to critique (e.g., integration). The purpose of this study is to describe processes of argument reappraisal in (fishbowl) discussions with randomly assigned positions (pro/contra). For example, what type of response (e.g., rebuttal, counterargument) is most likely to occur after an argument has been initiated in the discussion or how often will objections to an argument be dismissed or integrated? Moreover, the use of different argumentative speech acts and the complexity of argumentations will be examined to identify characteristics of this type of discussion setting.

The "controversial issue" approach within civic and democratic education essentially postulates "discussion as a key aspect of democratic education" (Hess, 2009, p. 28). Furthermore, discussion-based methods and the democratic classroom climate improve "students' political

content knowledge and democratic attitudes" (Schulz, Ainley, Fraillon, Kerr, & Losito, 2010; Torney-Purta, Lehmann, Oswald, & Schulz, 2001; Watermann, 2003). Likewise, controversy in classes has the potential to improve reasoning and critical thinking skills (Dam & Volman, 2004; Johnson & Johnson, 2009, 2014), moral education (Berkowitz, 1986; Berkowitz & Gibbs, 1983), subject-matter learning (Zohar & Nemet, 2002), and can be implemented to foster reflective judgement and decision-making as targeted in the model of political competence (Detjen, Massing, Richter, & Weißeno, 2012).

The multitude of learning goals associated with controversial discussions can be realized with a variety of instructional formats and teaching methods (e.g., pro-contra debate, fishbowl discussion, role-play, or constructive controversy). These differ in criteria such as the assignment of positions, necessity to reach consensus, number of active discussants, and rules of turntaking. Nevertheless, it is not the surface structures (e.g., instructional format) but the deep structures of classroom settings (e.g., cognitive activation) that are the decisive factors for learning (Klieme & Rakoczy, 2008; Kunter & Voss, 2013; Reusser, Pauli, & Waldis, 2010). There are several, deep-structured quality indicators of controversial classroom discussions, for example, the Toulmin-based (1958) structure (Petrik, 2010) and complexity of argumentation (Osborne, Erduran, & Simon, 2004) or the conceptual level of subject-matter content (von Aufschnaiter & Rogge, 2010). However, these criteria focus on verbal discourse as a product and do not account for the process dimension of verbal interaction (Nielsen, 2013). Therefore, argumentative transactivity, defined as "reasoning that operates on the reasoning of another" (Berkowitz & Gibbs, 1983, p. 402) and being an important feature of high-quality discussion processes, will be focused on in this paper.

The following section is dedicated to characteristics of discussing controversial political issues (2.1). These lay the groundwork for the importance of argument reappraisal in classroom discussions. The process of argument reappraisal itself will be presented in more detail in

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section 2.2 and related to the concept of transactivity. Section 3 deals with the paper's goal and research questions. The study design (4.1) and coding scheme (4.2) will be presented in section 4, and a brief introduction to methods of sequential analysis will be given (4.3). Results are reported in sections 5.1–5.3; section 5.4 illustrates sequential patterns and types of argumentations identified in this study by transcript excerpts, and can be read after the results presented or beforehand in order to gain better understanding of the different types and patterns of argument reappraisal. Section 6 discusses pedagogical implications and offers an outlook for future research.

2 Theoretical background

2.1 Discussion of controversial political issues

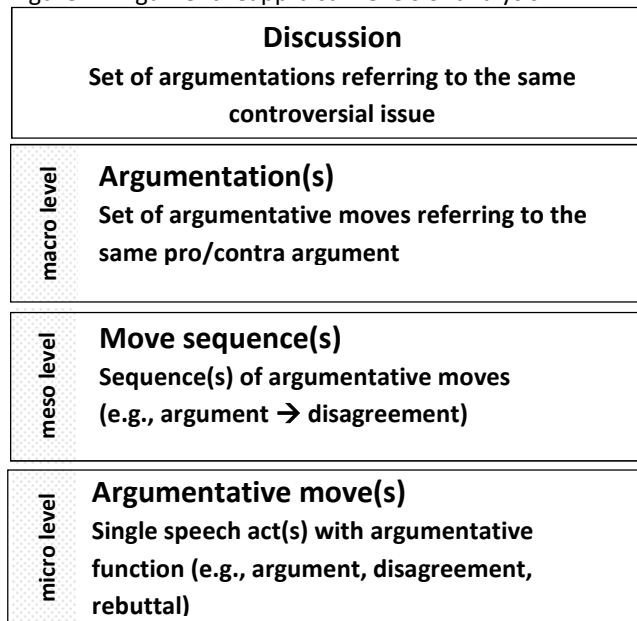
Controversial political issues can be defined as “authentic questions about the kinds of public policies that should be adopted to address public problems” (Hess, 2009, p. 5). They generally take the form of “Should ... be done?” or “What should be done to ...?” (p. 38f.). However, “topics are not controversial by nature” (p. 114). In fact, what is considered controversial depends on temporality and culture due to the socially constructed nature of controversy. For example, the issue of women's suffrage was viewed as controversial in the early decades of Western democracies, and the issue of evolution is considered as very controversial in certain parts of the United States of America but is much less controversial in Europe (p. 113ff.).

Controversy in the political domain may refer to the truth of propositions and/or the rightness of proposals (Habermas, 1997). This distinction “implies deep differences in the way argumentation works” (Kock, 2007, p. 234). Argumentation can prove or disprove the truth of a proposition (thus, consensus being possible and necessary); however, this is not possible in the case of proposals (p. 235).

Whereas in an investment, costs and output share a common currency (money) and can be summed up, such a dimension is missing in political controversies (p. 237). Moreover, in cases of insufficient or conflicting evidence, there may also be disagreement about the rightness of propositions (Levinson, 2006, p. 1208). Even if there is consensus about the rightness of the propositions used to justify the different standpoints, divergent value systems or personal interests can cause a “reasonable disagreement” (Rawls, 1993) about the relevant criteria for judging a controversial issue, different interpretations of the relevant criteria or the weight to be given to these criteria (Levinson, 2006, p. 1209ff). Consensus seems nearly impossible if people hold different ideologies or views of the world such as religious fanaticism (p. 1212). Thus, discussions on controversial issues do not necessarily lead to consensus. However, they bear potential for the critical evaluation of arguments. Such processes of argument reappraisal can be investigated at different

levels of analysis (see Figure 1): the micro level of argumentative moves, the intermediate level of move sequences, and the macro level of argumentations.

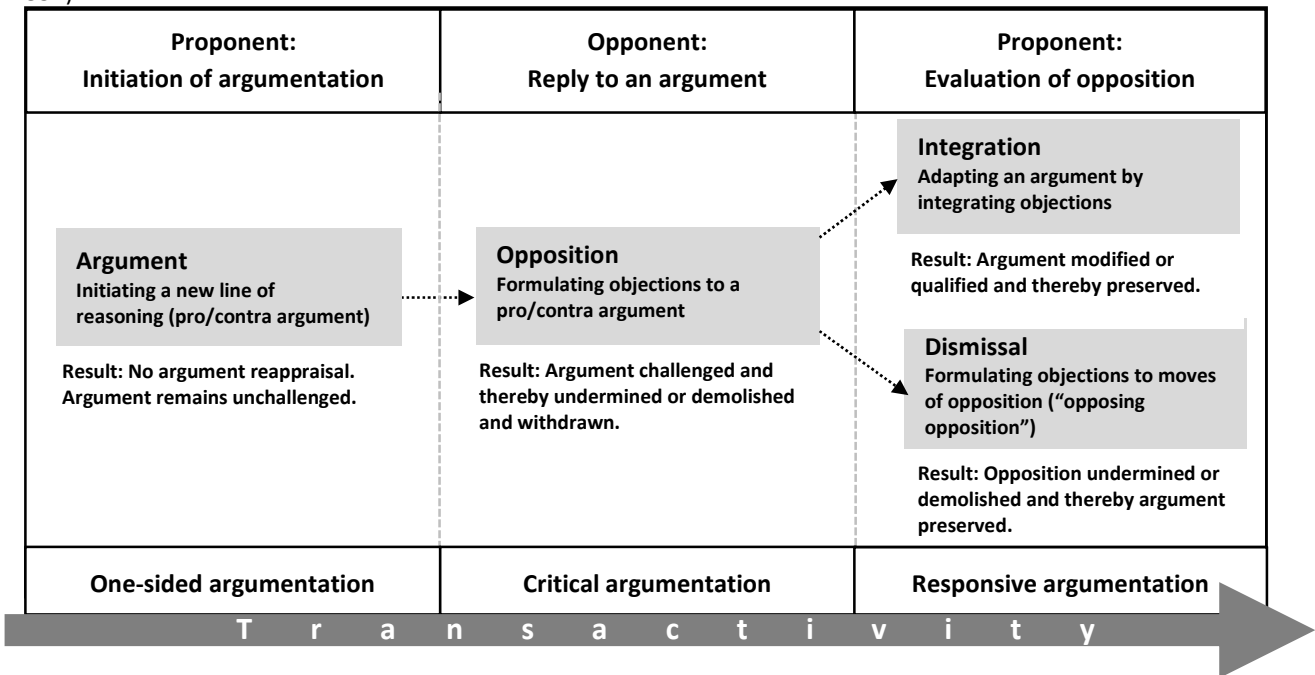
Figure 1: Argument reappraisal: levels of analysis



2.2 Model of argument reappraisal

The model of argument reappraisal (Leitão, 2000) is based on the Piagetian theory of conceptual conflict. As outlined in chapter 2.1, argumentation on the rightness of political actions does not lead to the falsification of an argument. Therefore, Leitão argues that complete changes in view are possible, but unlike in controversy. More probable are “subtle changes in aspects of an argument (e.g., inclusion of qualifiers, changes of lexical items, etc.)” (p. 338). The model of argument reappraisal was designed to trace this kind of knowledge building and belief revision in argumentative discourse (p. 342). Figure 2 shows a modified version: The four grey boxes represent different discourse modes: discussants can initiate a new line of reasoning (argument), formulate objections to an argument (opposition), integrate critique (integration) or dismiss moves of opposition (dismissal). The process of argument reappraisal begins with the elicitation of a pro or contra argument with/without statement of position. If there are no doubts regarding the validity or truth of this argument, the process of argument reappraisal ends at this initiating phase (indicated by dotted arrows). Otherwise, the opponents will formulate objections (e.g., questioning the truth of a claim). In a third step, the proponent of an argument responds to opposition.

Figure 2: Model of argument reappraisal for discussions with assigned positions (own figure based on Leitão 2000, p. 357)



Originally, Leitão (2000) differentiates four possible reactions. The objections can be accepted, integrated, localized (i.e., local acceptance) or dismissed (pp. 348–354, p. 357). In discussions with assigned positions (e.g., pro/contra), not all four options of reacting to opposition are rational strategies. Felton, Garcia-Mila, and Gilabert (2009) point out that if discussion-settings aim at persuasion (e.g., debate or settings with assigned positions), “individuals must dismiss or deflect counter-arguments in order to convince others to adopt their conclusions” (p. 422). Thus, discussants will not withdraw arguments explicitly nor will they make explicit concessions. In cases in which they had to, it would be rational to do this implicitly (e.g., by shifting the focus of discussion instead of replying to a convincing critique). Therefore, the complete or local acceptance of objections is not included in the modified model for discussions with assigned positions. Accordingly, Figure 2 shows two types of reply to opposition: a) integration: the proponent adapts their argument to the critique either by qualifying (but not withdrawing) the argument or by providing more evidence in support of it and b) dismissal: the proponent rejects opposition to their argument by attacking the statement of opposition itself. This can be realized with the same argumentative moves, such as opposition to an argument (e.g., rebuttal, counterargument, disagreement, see coding scheme in section 4.2).

This triadic unit of argument, opposition, and reply is reminiscent of the well-known initiation-response-feedback (IRF) pattern (Sinclair & Coulthard, 1975) or initiation-response-evaluation (IRE) pattern (Mehan, 1979) in teacher-led classroom talk. In this terminology, an argument can be considered an initiating move that invites reasoning on one specific aspect regarding the controversial issue for discussion. Opposition corresponds to a legitimate response in argumentative

discourse aimed at argument reappraisal. The replies to opposition link both elements: the argument of the proponent and the objections of the opponent (just like the teacher in classroom talk links his or her question and the appropriateness of the student’s answer). Both patterns serve analytical purposes but do not reflect authentic discourse, either in classroom discussion or in teacher-led classroom talk. Similar to the IRE/IRF-pattern, the argument-opposition-reply (AOR) pattern can rather be interpreted as a triadic core that optionally becomes complemented by additional argumentative moves (Molinari, Mameli, & Gnisci, 2012, p. 416).

From the model of argument reappraisal it follows that at least three discourse modes (and argumentative moves) are required to fulfill the process of argument reappraisal: argument, opposition, and reply to opposition. Thus, three types of argumentations can be defined (see Figure 2). In one-sided argumentations, arguments are not challenged by opposition. In critical argumentation, opponents formulate objections and thereby undermine or demolish the argument. If the proponent does not respond to opposition, this implicitly corresponds to a withdrawal. Responsive argumentation occurs when the proponent reacts to opposition by either integrating critique (responsive-integrative) or challenging statements of opposition (responsive-dismissive). Responsive argumentation is of specific interest in learning settings because it indicates impact of opposition on the proponent’s reasoning (Leitão, 2000, p. 356). Additionally, if more than one student argues for the same position, students can support a line of reasoning of their discussion partner (see discourse mode “co-construction” in coding scheme, table 1).

As opposed to the formulation of new arguments (discourse mode: argument), the discourse modes of opposition, integration, and dismissal imply reference to preceding arguments. Thus, processes of argument

reappraisal require transactivity, defined as “reasoning that operates on the reasoning of another” (Berkowitz & Gibbs, 1983, p. 402). The notion of “transactivity” goes back to Dewey and Bentley (1949). Later on, it was transferred to learning processes in other contexts, especially to identify high-quality collaborative learning processes (Stegmann, Weinberger, & Fischer, 2011; Teasley, 1997) and classroom discussions (Felton, 2004; Sionti, Ai, Rosé, & Resnick, 2011). While arguing, students “become aware of inconsistencies between their reasoning and that of their partner or even within their own [mental, D.G.] model itself (Teasley, 1997)” (Sionti et al., 2011, p. 33f.). Argumentative transactivity is considered a high-quality feature of learning processes because it indicates shared reasoning, in-depth discussions, and may trigger cognitive conflict in case of opposition. It is a necessary condition for argument reappraisal in discussions.

3 Goal and research questions

The goal of this study is to describe processes of argument reappraisal in fishbowl discussions with assigned positions. The research questions combine different levels of analysis to provide a differentiated view. Differences and similarities between the classes examined will be investigated for all research questions.

Research question 1 (micro level): What is the distribution of different argumentative moves (e.g., disagreement, rebuttal) in processes of argument reappraisal?

Research question 2 (macro level): What is the complexity of argumentations (number of reply moves per argument)? What is the distribution of types of argumentations (one-sided/critical/responsive)?

Research question 3 (meso level): What patterns of argument reappraisal (e.g., argument -> disagreement) can be identified?

4 Method

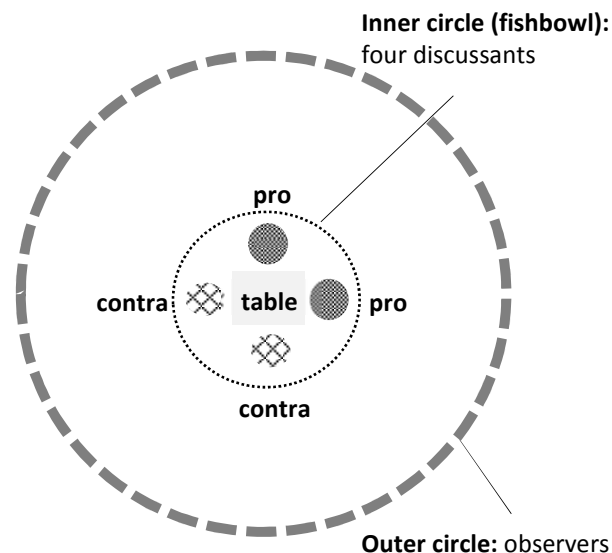
4.1 The video study “Argumentative teaching-learning processes”

The research presented here is part of a video study titled “Argumentative teaching-learning processes” (November 2013–May 2014, Gronostay, 2015), realized as a PhD project at the chair of Didactics of Social Science Education (Prof. Sabine Manzel) at the University of Duisburg-Essen. The project describes argumentative discourse that emerges in fishbowl discussions and relates the quality of discourse to influencing factors (e.g., argumentation training, student’s political self-concept). Ten classes of 8th/9th graders in secondary schools throughout North Rhine-Westphalia received a standardized political learning unit (4 × 45 min.) within regular civic education lessons. After learning subject-matter content, the classes discussed a controversial political issue.

This study draws on a sub-sample of four classes that did not receive any intervention. Two of the participating classes were from grade 9 and two from grade 8. The classes had different teachers and were from three schools (class A and B from same school). All schools were urban and of average socio economic levels. Three were public schools and one a private confessional school. The learning unit was audio and video recorded. Despite the presence of cameras in class, students perceived the video recorded lessons as predominantly authentic and comparable to regular lessons (Gronostay, Neumann, & Manzel, 2015).

The learning unit dealt with political concepts of (right-wing) extremism and well-fortified democracy (in German “*Streitbare Demokratie*” or “*Wehrhafte Demokratie*”). In Germany, extremist political parties can be banned by decision of the Constitutional Court if they or their adherents “seek to undermine or abolish the free democratic basic order or [...] endanger the existence of the Federal Republic of Germany” (Article 21(2), German Basic Law). Well-fortified democracy is a concept not common to all democratic states; the United States of America or the United Kingdom as western democracies with long traditions do not have an instrument for banning extremist political parties. The focus of the learning unit was on the tension between principles of democracy and the will to ensure the persistence of democracy. This controversial political issue was chosen because of the ongoing public debate regarding right-wing extremism in Germany, triggered by the disclosure of a series of assassinations by the neo-Nazi group National Socialist Underground (Nationalsozialistischer Untergrund) in November 2011. After a failed attempt to ban the far right-wing extremist National Democratic Party (Nationaldemokratische Partei Deutschlands) in 2003, a second attempt was initiated in December 2013 by the German federal states and is still pending (for more information see e.g., Borrud, 2015 or Crossland, 2013).

Figure 3: Seating arrangement of fishbowl discussion



The precise issue put up for discussion was “Should there be a second attempt to ban the National Democratic Party?” It was conducted as a fishbowl discussion: four students argue in the inner circle of the “fishbowl” and the other students in attendance are seated in an outer circle around the “fishbowl” (see Figure 3). This method was chosen because it allows students to participate as much as they want to, given that they could change between inner and outer circle at all times. To ensure controversy, half of the students had to argue for the pro position and the other half for the contra position of the discussion. Later on, students were encouraged to reflect on their own standpoint regarding this controversial issue.

4.2 The coding scheme

Based on transcripts, the discussions were segmented into numbered talk turns ($T_1, T_2 \dots T_n$) according to the non-content criteria of continuous speech. In the first step, talk turns that referred to the discussion topic and had argumentative function were coded as “on topic,” whereas all other turns (e.g., organizational questions, teacher asking for silence, requests for/statements of clarification or explanation) were coded as “off-topic.” In the second step, “on topic” turns were coded for argumentative transactivity, using a coding scheme (see Table 1) that draws on the codes used in Felton and Kuhn (2001), Felton, Garcia-Mila, and Gilabert (2009) and Felton, Garcia-Mila, Villarroel, and Gilabert (2015). The scheme includes eight exhaustive and mutually exclusive codes that correspond at a more general level to four discourse modes. The default was that every talk turn had to be assigned exactly one code. However, coders had to split talk turns (e.g., $T_1 \rightarrow T_{1,1}, T_{1,2}$) if these included more than one argumentative move. If coders disagreed on the number of moves per talk turn, the higher number of moves was chosen. Additionally, the coders had to indicate if there was a reference move. The process of coding was performed according to methods of qualitative content analysis (Mayring, 2014) and procedures for quantifying verbal data recommended by Chi (1997). All discussions were coded independently by two coders (the author being one of them). A coder training and manual was conducted beforehand.

The codings were entered in IBM SPSS statistics software (version 22.0) to compute inter-coder reliability and descriptive statistics. Cohen’s Kappa = .90 was reached for the “on/off-topic” codings. The inter-coder reliability for all categories of argumentative transactivity was Cohen’s Kappa = .65 or higher. Given the high inference of coding discourse data, this can be considered satisfactory (Bakeman & Quera, 2011, p. 62ff.). The codings were compared, and disagreements were resolved through discussion.

Table 1: Coding scheme for argumentative transactivity

Discourse mode	Argumentative move	Description of argumentative move (based on Felton & Kuhn, 2001; Felton et al., 2009; Felton et al., 2015)
Argument	Argument	Claim advanced in support of speaker’s position (can be a pro or contra argument)
Co-Construction	Agreement	Statement of (unjustified) agreement with a preceding assertion of the discussion partner
	Continuation	Continuation or completion of a preceding assertion of the discussion partner
	Elaboration	Extension or elaboration of a point made by the discussion partner in a preceding assertion, adding something new
Opposition/Dismissal	Disagreement	Statement of (unjustified) disagreement with a preceding assertion of an opponent
	Counterargument	Critique of an opponent’s assertion that advances an unrelated claim, rather than addressing the opponent’s claim
	Rebuttal	Critique of an opponent’s assertion that challenges or undermines the strength of the opponent’s claim
Integration	Integration	Statement that integrates a point advanced by an opponent by either qualifying the argument or by providing more evidence in support of the argument

Annotation: “Discussion partner” refers to discussants with congruent (assigned) position to the speaker. “Opponents” are discussants with conflicting (assigned) position to the speaker’s position.

4.3 Sequential analysis

To detect the dynamics of argumentative discourse, methods of sequential analysis were conducted. As opposed to traditional methods of data analysis, the data sheet in sequential analysis not only includes the coding category per coded event but also the relationship between the coded events. Sequential analysis was realized with the Discussion Analysis Tool (DAT, Jeong, 2005b). Its algorithm allows for analyzing threaded discourse data (Jeong, 2005a), which is not supported by the alternative software (for an overview, see O’Connor, 1999). Figure 4 illustrates the type of information in the data file: the first column displays row numbers; the second column contains information regarding the coding category (see coding scheme); and the third column indicates the sequential relationship (thread level). For example, the argument in row 4 initiates a longer argumentation and two counterarguments (row 5 and 7) refer to this argument (thread level: 2). The first counterargument



(row 5) is co-constructed via agreement (row 6), whereas the second counterargument (row 7) elicits a rebuttal (row 8). By contrast, the argument in row 3 does not elicit any replies (thread level of following event: 1).

Figure 4: Example of data file

	Coding category	Thread level
1	argument	1
2	elaboration	2
3	argument	1
4	argument	1
5	counterargument	2
6	agreement	3
7	counterargument	2
8	rebuttal	3

Transitional probabilities and z-scores of two event sequences (e.g., argument -> counterargument) were used to identify patterns in the discourse data. Transitional probabilities P_t (like conditional probabilities) are the probabilities of a reply move (target move) following a given move. They were calculated with the formula $P_t = F_g / F_t$ in which F_g is the observed frequency of a given move sequence and F_t marks the marginal total for the given move (Bakeman & Gottman, 1997, pp. 95–99). The z-scores for each event pairing were computed according to Bakeman and Gottman (pp. 108–111). The formula used “takes into account the differences in relative and observed frequencies of both given and target events” (Jeong, 2001, p. 59, italics in original). Given the small sample size, z-scores were used to identify patterns in the data and not to claim statistical significance.

5 Results

5.1 Use of argumentative moves (micro level)

Table 2 shows absolute and relative frequencies of argumentative moves (and corresponding discourse mo-

des). On average, students engaged 55.54 % (SD = 5.27) of the moves in opposing claims of their peers. A proportion of 25.65 % (SD = 4.44) was dedicated to the externalization of arguments. Moreover, 11.61 % (SD = 1.71) were used for the integration of critique. Students co-constructed argumentation in 7.21 % (SD = 1.70) of the moves.

Counterarguments are the most frequently used move, accounting for 36.38 % (SD = 1.99) of all moves. Furthermore, in 12.40 % (SD = 2.38) of the moves, opposition was realized by rebuttals. Students co-constructed argumentation via elaborations in 4.64 % (SD = 2.31) of the moves, via agreements in 1.75 % (SD = 0.68) and via continuations by 0.82 % (SD = 0.57). In general, the distribution of argumentative moves was very similar across classes. However, chi square test showed a significant difference in the use of disagreements ($\chi^2(3, N = 452) = 17.55, p < .001$). The proportion of disagreements varies in fact between 14.20 % in class A and 0.00 % in class B.

The classes produced a quite different total amount of argumentative moves (ranging from 67 moves in class C up to 169 moves in class A). Therefore, the occurrence of each argumentative move was further tested for significant differences between the first and the last half of each discussion to examine if there was heterogeneity in the use of moves within the discussions. Again, the code disagreement was the only one that showed significant differences. In class A, it occurred more frequently in the last half of the discussion than in the first half ($\chi^2(1, N = 169) = 15.00, p = .000$). As disagreement was the only move used differently to a significant degree across classes and across discussion time (in class A), it can be identified as a type of outlier. In sum, the use of argumentative moves (and corresponding discourse modes) on the micro level of analysis was very homogenous both between and within classes.

Table 2: Distribution of argumentative moves (absolute und relative frequencies) (N=452)

	Class A		Class B		Class C		Class D		All classes (%)	
	Num.	%	Num.	%	Num.	%	Num.	%	M	SD
Argument	34	20.12	27	32.14	18	26.87	31	23.48	25.65	4.44
Co-Construction	15	8.88	6	7.14	3	4.48	11	8.33	7.21	1.70
Agreement	4	2.37	2	2.38	1	1.49	1	0.76	1.75	0.68
Continuation	1	0.59	1	1.19	1	1.49	0	0.00	0.82	0.57
Elaboration	10	5.92	3	3.57	1	1.49	10	7.58	4.64	2.31
Opposition	100	59.17	39	46.43	39	58.21	77	58.33	55.54	5.27
Disagreement	24	14.20	0	0.00	2	2.99	13	9.85	6.76	5.59
Counterargument	58	34.32	29	34.52	26	38.81	50	37.88	36.38	1.99
Rebuttal	18	10.65	10	11.90	11	16.42	14	10.61	12.40	2.38
Integration	20	11.83	12	14.29	7	10.45	13	9.85	11.61	1.71
Total*	169	100.00	84	100.00	67	100.00	132	100.00		

* Minimal deviations from the total value of 100.00% are due to rounding.

5.2 Complexity of argumentations (macro level)

The analysis of single argumentative moves provides no information about the complexity of argumentations. Theoretically, it was argued that the discourse modes argument, opposition, and integration and therefore argumentations with at least three argumentative moves (one argument plus two reply moves) are needed to complete the minimum requirements of argument reappraisal.

Therefore, the number of reply moves per argument was examined. In class A, arguments received on average 3.97 reply moves (SD = 5.21); in class B, 2.11 moves (SD = 2.50); in class C, 2.72 moves (SD = 3.41); and in class D, 3.26 moves (SD = 4.41). Kruskal-Wallis test showed no significant differences in the number of reply moves per argument between the four classes ($\chi^2(3, N = 110) = .265, n.s.$).

Moreover, the median was only one reply move per argument in all classes. The maximum number of reply moves varied between 12 moves in class B up to 20 moves in class A; the minimum number was zero replies in all classes. As reflected in the high standard deviations and maximum values, the complexity of argumentations was very heterogeneous within discussions of one class but much less between the discussions of different classes.

Figure 5: Types of argumentations (classes A-D)

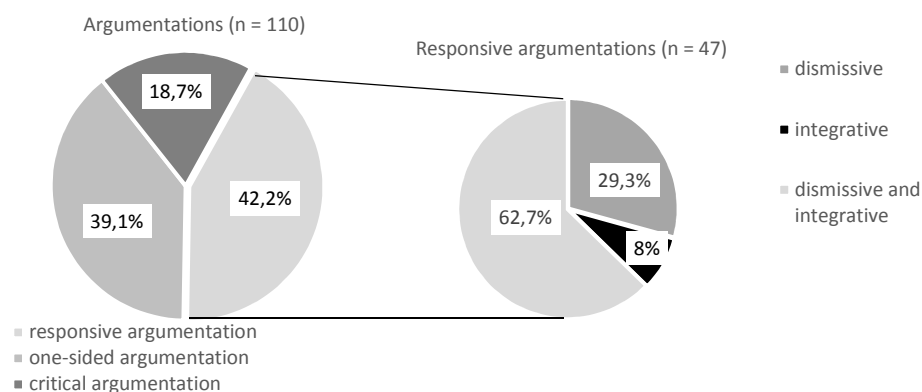


Figure 5 shows the distribution of types of argumentations. Again, no significant differences were found in the distribution of types of argumentations ($\chi^2(6, N = 110) = .789, n.s.$). Across all classes, a majority of 42.2 % pertains to the type responsive argumentation. One-sided argumentations account for 39.1 %. Critical argumentations were observed in 18.7 %. Regarding the responsive type, a further differentiation between the type of response to opposition was made: 62.7 % of the responsive argumentations included both dismissive and integrative replies, 29.3 % included only dismissive, and 8.0 % included only integrative replies. Additionally, the co-constructive mode was used in 20.5 % of all argumentations (not depicted in Figure 5).

5.3 Sequential patterns of discourse (intermediate level)

Research question 3 concerns the identification of sequential patterns in processes of argument reappraisal. Note that the following results concern move sequences within argumentations. Argumentations are defined as conjunctions of argumentative moves referring to the same pro/contra argument (see Figure 1). The results will be presented graphically by transitional state diagrams to provide an intuitive view on the sequential flow within argumentations.

Figure 6 shows transitional state diagrams for the classes A–D. The values on the arrows are transitional probabilities. For example: out of the total of 18 replies given to disagreements in class A, a proportion of 10 replies were likewise disagreements, which results in a transitional probability of $10 \cdot 100 / 18 = 56\%$. Given the low absolute frequencies of co-constructive moves (see Table 2), all three moves of co-construction were treated as one category in the diagrams.

In general, the four transitional state diagrams show quite diverse, idiosyncratic sequential structures. The rare use of co-construction and disagreements in two of the classes results in four-node diagrams in the case of classes B and C compared to the more complex diagrams of the classes A and D. Some event sequences are present in one or part of the classes, but absent in others.

However, five sequential patterns, i.e., sequences with transitional probabilities (P_t) that were significantly higher than the expected probability, z-score >1.96 , alpha <0.05 , could be identified.

The pattern rebuttal \rightarrow integration was observed in all classes but with different transitional probabilities (P_t : 46 % in class A and D, up to

88 % in class B). There is no other significant sequence common to all classes. For classes A, B and C, the pattern argument \rightarrow counter-argument was observed with transitional probabilities between 63 % in class A and 79 % in class C. By contrast, class D shows the pattern argument \rightarrow rebuttal ($P_t = 27\%$). Furthermore, an iterative disagreement \rightarrow disagreement pattern with $P_t = 44\%$ in class D and 56 % in class A was found. In class A, a second iterative sequence was observed significantly more often than expected: co-construction \rightarrow co-construction (P_t : 38%). This sequence was observed in class D, too. However, it was based on only two event pairs and therefore not tested for statistical significance.

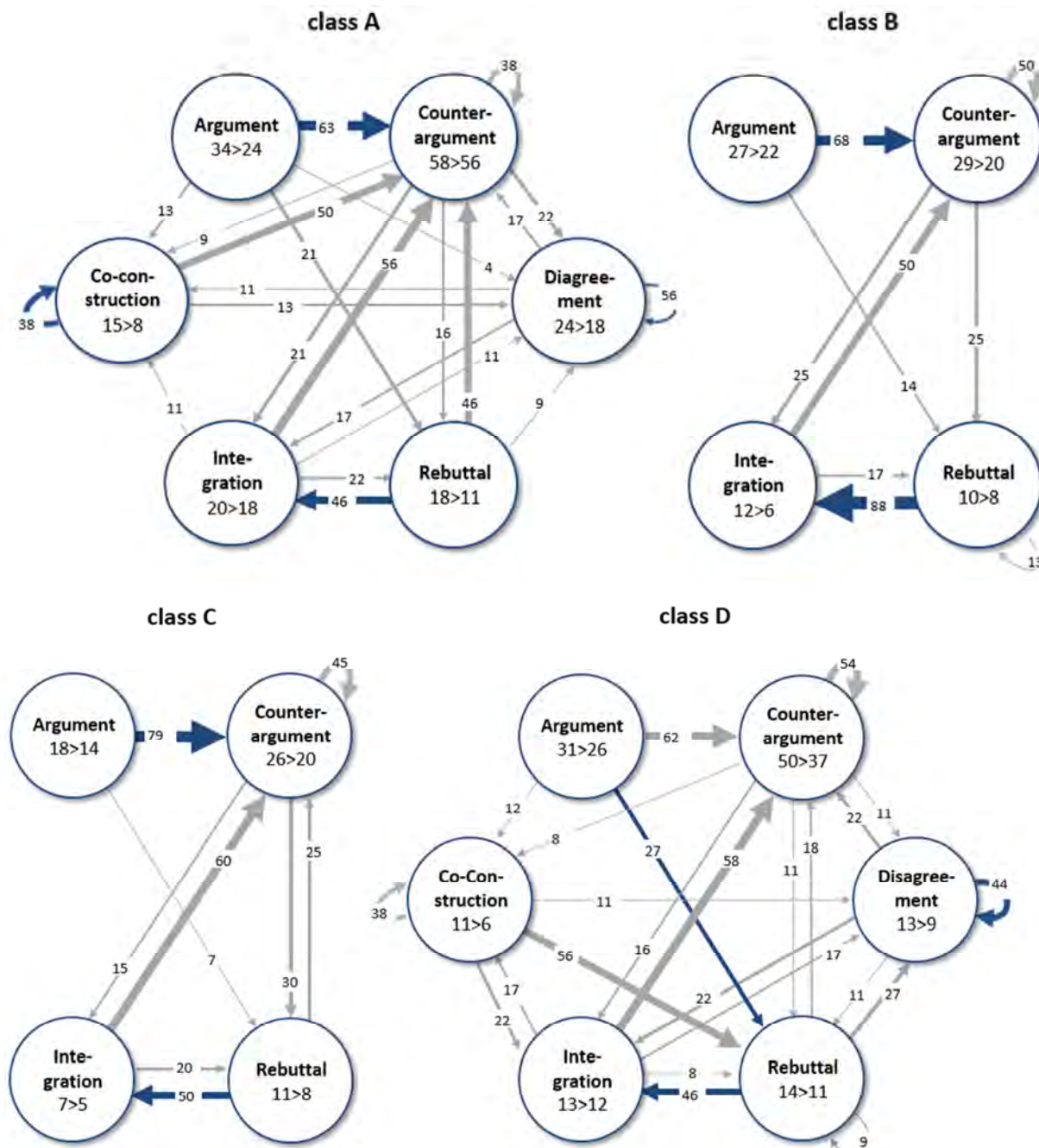


Figure 6: Transitional State Diagrams: Sequences of argumentative moves

Annotation: The circles denote the argumentative moves. The values in the circles show the number of given moves of the respective move category and the number of replies (e.g., in class A 34 arguments elicited 24 replies). The values on the arrows are transitional probabilities (e.g., in class A an argument was followed by 63% transitional probability by counterargument). The width of the arrows between moves represents the strength of the transitional probabilities. Blue arrows indicate transitional probabilities that were significantly higher than the expected probability (z -score > 1.96, $\alpha < 0.05$). The transitional probabilities of outgoing arrows do not always sum to 100% either because event categories that occurred rarely were not included or due to rounding. Transitional probabilities were computed using the Discussion Analysis Tool (DAT, Jeong, 2005b).

The transitional state diagram in figure 7 provides a condensed view of the sequential dynamics at the level of discourse modes (the three moves of opposition were treated as one category). At this level of granularity only two sequences were observed with transitional probability higher than expected: opposition \rightarrow integration ($P_t = 23\%$ in class C and D up to 43% in class B) and co-construction \rightarrow co-construction ($P_t = 38\%$ in class A). Although other transitions were not observed significantly more often than expected, the diagram visualizes

in a descriptive way which transitions were more likely compared to others. Moreover, the low response ratios of co-construction (RSP: 0.00 in class B up to 0.54 in class D) indicate that this discourse mode was used predominantly as a reply move to preceding statements and rarely elicited moves itself. By contrast, moves of integration show very high response ratios (RSP: 0.50 in class B up to 0.92 in class D), meaning they were very likely to elicit replies.

To conclude, analyses showed that processes of argument reappraisal unfold in very diverse ways. The different argumentative moves were highly interconnected and used as given moves (that elicit replies) as well as reply moves to preceding statements. Moreover, the sequential structure of the classes was much more comparable at the level of discourse modes. Sequential patterns that were common to more than one class will be illustrated in chapter 5.4.

Results regarding event categories with large row sums (and less extreme expected probabilities) are more

reliable and better to interpret than those that are based on few (< 30) tallies (Bakeman & Quera, 2011, p. 110). In general, the marginal totals (row sums) of the observed move sequences in this study were small. Two alternatives were available to enlarge row sums: Pooling the data across classes or reducing the number of categories by adding up the eight argumentative moves to four discourse modes (see figure 7). The author decided against the first alternative because the scope of this paper was to gain explorative and detailed insights into sequential patterns of controversial discussions.

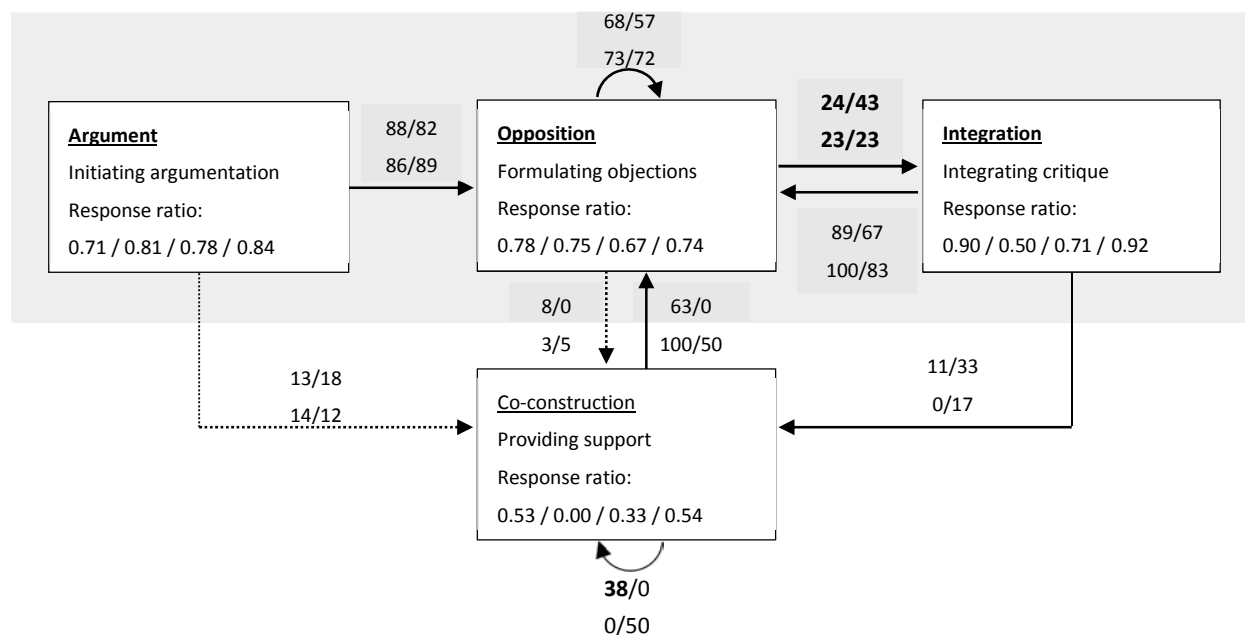


Figure 7: Transitional State Diagram: Sequences of discourse modes

Annotations: The four boxes denote discourse modes. Response ratios for every discourse mode and class are stated in the boxes (class A/B/C/D). The response ratio gives the number of target events divided by the number of given events for each event category. The values on the arrows are transitional probabilities (class A/B/C/D). Values in bold indicate transitional probabilities that were significantly higher than the expected probability (z-score > 1.96, alpha < 0.05). Transitional probabilities and reply rates were computed using the Discussion Analysis Tool (DAT) (Jeong, 2005b).

5.4 Giving life to theory: illustration by transcript excerpts

In this part the three types of argumentations (see section 5.2) and the identified sequential patterns (see section 5.3) will be illustrated by transcript excerpts. To begin with, excerpt 1 shows an example of one-sided argumentations. Students accumulate reasons for and against outlawing the political party NPD without referring to each other's statements. Whereas Sf221 argues that the ban of the NPD would go along with difficulties in observing the NPD (which is under observation of the Federal Office for the Protection of the Constitution), Sf235 refers to public money that could be saved in case of a ban (the NPD as every political party in Germany receives public money) and Sf222 points to the problem that adherents of the NPD could join and thereby support other right-wing extremist parties after a ban. Thus, the students engage in broadening the discussion but do not deepen the arguments. All three arguments remain unquestioned and unconnected. As in a pro-contra table (where single arguments are enumerated), there are no criteria for

evaluating the persuasive power of the given arguments. This is an example of non-transactive argumentation.

Another example of one-sided argumentation is given in excerpt 2. In contrast to excerpt 1, this argumentation is transactive, given that students argue co-constructively. Sf 346 externalizes a pro argument by saying that political parties which aim at discriminating people based on their race, physical appearance, or religion should not be allowed. Sf330, who represents the same side of the discussion, carries this idea on by making a reference to the Nazi regime of Hitler. The second utterance directly refers to the previous statement and elaborates it by adding new information. The line of reasoning expressed by Sf346 is deepened. However, like in excerpt 1, there is no critical evaluation of the argument.

Excerpt 1: One-sided argumentations (non-transactive)

Sw221 (Contra): [...] Ich bin auch gegen ein Verbot, weil wenn die NPD verboten werden würde, dann könnte man das Handeln der NPD nicht mehr so gut überschauen. So, sieht man ja, was die machen und was die planen. [Argument]	Sf221 (contra): [...] I'm against a ban, too, because if the NPD were banned, then one could no longer oversee the actions of the NPD. Now one can see what they are doing and planning. [argument]
Sw235 (Pro): Ja, und außerdem werden dadurch dann auch die Kosten gespart. Also vor allem auch aus den staatlichen Töpfen, weil die NPD dieses Geld ja meist für die menschenverachtenden Plakate ausgibt. [Argument]	Sf235 (pro): Yes, and furthermore one could save costs. Well, that is government money because the NPD spends this money on discriminatory election posters. [argument]
Sw222 (Contra): Also die Anhänger der NPD könnten ja auch zu anderen Parteien gehen und dann bekommt diese Partei dann nur mehr Anhänger. [Argument]	Sf222 (contra): Well, the supporters of the NPD could also switch to other parties and then these parties would just get more supporters. [argument]

[Excerpt from class A, turns 10–12]

Excerpt 2: One-sided argumentation (transactive)

Sw346 (Pro): Ja, aber es geht ja an sich hauptsächlich um die NPD, es geht ja auch um rechtsextreme Parteien. Und man sollte an sich finde ich keine Partei erlauben, in der andere Leute diskriminiert werden aufgrund ihrer Herkunft oder ihres Aussehens oder ihrer Religion. Deswegen sollte man sowas von Anfang an nicht erlauben. {Auf der Contra-Seite wechselt Sm326 für Sm339 in den Innenkreis.} [Argument]	Sf346 (pro): Yes, but it is mainly about the NPD, it is mainly about right-wing extremist parties. I think, generally, one should not allow parties that discriminate against other people because of their origin or appearance or religion. Therefore, one should not allow such things from the beginning. {On the contra side of the fishbowl, Sm326 switches in for Sm339.} [argument]
Sw330 (Pro): Man hat ja gesehen, wohin das führt. Die Vergangenheit. Als Hitler war. [Elaboration]	Sf330 (pro): One has seen where such things lead to. In the past. When there was Hitler. [elaboration]

[Excerpt from class D, turns 115–116]

Excerpt 3 illustrates an iterative pattern of co-construction. At first, the counterargument of Sf325 remains unclear regarding the content. She claims that by banning political parties “it still exists” which may refer to right-wing extremist ideology or to the organization itself (like in underground). In the following sequence of co-construction, the unclear meaning becomes more precise and is expressed more explicitly. This sequence is highly transactive as the students co-construct the argument together.

Excerpt 3: One sided-argumentation with sequential pattern co-construction → co-construction

Sw325 (Contra): Ja, es wurden ja schon Parteien verboten und die existiert ja immer noch. [Gegenargument]	Sf325 (contra): Well, parties have been banned already and it still exists. [counterargument]
Sm339 (Contra): Dann kommt eine Neue nach, ja. [Elaboration]	Sm339 (contra): Another one follows, yes. [elaboration]
Sw325 (Contra): Dann gründen die eine neue Partei und schließen sich dann anderen Parteien an. [Elaboration]	Sf325 (contra): They establish a new party then and follow up with new parties. [elaboration]
Sm339 (Contra): Eben. Es hat keinen Sinn sie zu verbieten. (.) Da- Da- Da kommen immer wieder neue. [Zustimmung]	Sm339 (contra): That's right. There is no sense in banning. New ones will follow again and again. [agreement]

[Excerpt from class D, turns 103–106]

Excerpt 4 illustrates a case of critical argumentation. The second argumentative move refers directly and in a critical way to the content of the argument of Sf106. Sm91 counter argues that the ideology of the NPD party is not a decisive argument because it cannot be realized anyway as the party is unpopular. Thus, the argument of Sf106 is not negated but a new aspect is added that lowers its relevancy. Note that the NPD party has about 7,000 members (not 70,000).

Excerpt 4: Critical argumentation with sequential pattern argument → counterargument

Sw106 (Pro): Also wir könnten jetzt vielleicht zu den Zielen mal hin. Also ich meine, im Moment ist die NPD natürlich eine Minderheit. Aber ich überlege jetzt zum Beispiel nach der Ideologie und eines der Ziele ist eigentlich ein völkischer Staat, also ein Führerprinzip. Das ist die Ideologie von denen, wie man einen Staat führen sollte. Und ich wollte euch mal fragen, was denkt ihr denn darüber, über das Führerprinzip? Also ist das demokratisch oder nicht? Also ich glaube, das ist undemokratisch. [Argument]	Sf106 (pro): Well, we could now talk about their aims. I mean, at the moment the NPD is a minority for sure. But I am thinking for example about the ideology and one of their aims is an ethnically pure state, leadership of one. That is the ideology of theirs for how to run a state. And I wanted to ask you what do you think about the leadership of one principle? Is this democratic or not? I believe that it is undemocratic. [argument]
Sm91 (Contra): Was aber nicht erreicht werden kann von der NPD, weil sie einfach zu klein ist dafür. Eine Partei mit 70.000 Mitgliedern im Gegensatz zu einer Partei wie die CDU, die 470.000 hat. [Gegenargument]	Sm91 (contra): Which cannot be achieved by the NPD because it is too small for such a thing. A party with 70,000 members in contrast to a party like the CDU, which has 470,000. [counterargument]

[Excerpt from class B, turns 88–89]

An example of the iterative disagreement pattern in critical argumentation is given in excerpt 5. Students of the pro-side of the discussion argue that currently the NPD does not have much political influence, given that the party has no seats in the federal parliament and only



two in state parliaments (state parliaments of Saxony and Mecklenburg, Western Pomerania; in August of 2014 the NPD lost its seats in the parliament of Saxony). Sm380 claims that the democracy in Germany would be in danger if the NPD gets elected to the federal parliament. Sf377 disagrees and Sm380 insists. Thus, two moves of dismissal follow consecutively. Further analyses are needed to identify the individual motives associated by disagreements. Possibly they express emotionally charged argumentation and/or represent sub-issues that are considered key by the discussants (as indicated by the intonation in italics). Whereas motives remain unclear, this sequence of disagreements leads to further elaboration and thus was productive and transactive in terms of argument reappraisal.

Excerpt 5: Critical argumentation with sequential pattern disagreement → disagreement

Sm380 (Pro): Ja, aber das Problem ist, jetzt haben die noch nicht so eine starke Macht im Landtag oder im Bundestag. Halt gar nichts, aber [...] wenn Sie reinkommen, würde das sofort die <i>Abschaffung</i> der Demokratie bedeuten. [Gegenargument]	Sm380 (pro): Yes, but the problem is, now they do not have much power in the state parliament nor in the federal parliament. Well, nothing, but [...] if they get in, this would result in the immediate <i>abolition</i> of democracy. [counterargument]
Sw377 (Contra): <i>Nein</i> , das würde <i>nicht</i> die Abschaffung der Demokratie bedeuten. [Widerspruch]	Sf377 (contra): <i>No</i> , that would <i>not</i> result in the immediate abolition of democracy. [disagreement]
Sm380 (Pro): <i>Doch, doch</i> . [Widerspruch]	Sm380 (pro). <i>Of course, of course!</i> [disagreement]
Sw378 (Contra): <i>Nein</i> , das würde <i>nicht</i> die Abschaffung der Demokratie bedeuten. Sie würde eine totale Wahlblockade kriegen. Wer von den anderen würde die denn wählen? Wenn du als Partei im Landtag bist, dann hast du nicht sofort die vollkommene Macht, nur weil du drin bist. [Elaboration]	Sf378 (contra): <i>No</i> , that would <i>not</i> result in the immediate abolition of democracy. They would get a complete election blockade. Which of the others would elect them? If you are in state parliament as a political party, you do not have total power immediately, just because you're in. [elaboration]

[Excerpt from class A, turns 118–121; italics indicate emphasis]

In excerpt 6, an example of responsive argumentation is given. A discussant of the contra side, Sf163, disagrees with the assertion of Sm80, a pro-discussant. Sm80 does not give up his initial argument but he accepts the restriction to secrecy or underground activity. He modifies his argument by integrating this limitation (“secrecy”) in his argumentation. In summary, we have three argumentative moves, including transactive and integrative argumentation.

Excerpt 6: Responsive argumentation with sequential pattern rebuttal → integration

Sm80 (Pro): Ja also, sie werden halt nicht mehr vom Staat unterstützt und sie werden auch nicht mehr so leicht Mitglieder anwerben können, weil sie halt weder Werbung machen können, noch können sie irgendwie sich öffentlich treffen. [Argument]	Sm80 (pro): Yes, well, they are no longer supported by the government and can no longer easily recruit members because they cannot advertise and they cannot meet in public. [argument]
Sw163 (Contra): Sie können ja selber geheime Werbung machen. [Einwand]	Sf163 (contra): They could advertise secretly. [rebuttal]
Sm80 (Pro): Ja, aber das dann halt beispielsweise nur auf geheimen Plattformen (.) Und neue Mitglieder werden diese geheimen Plattformen erst einmal nicht finden. [Integrative Antwort]	Sm80 (pro): Yes, but this, for example, only on secret platforms. (.) And new members cannot access these platforms at first. [integrative reply]

[Excerpt from class B, turns 19–21]

6 Discussion

The purpose of this study was to describe processes of argument reappraisal in controversial classroom discussions with assigned positions. Based on the concept of transactivity and the model of argument reappraisal (Leitão, 2000), a total of 452 argumentative moves in four classroom discussions have been analyzed. What type of discourse emerged from fishbowl discussions with assigned positions?

Regarding the use of single argumentative moves, students engaged by more than half of the moves in opposing claims of their peers, about one-quarter in externalizing new arguments for their respective positions, every tenth move was dedicated to the integration of critique and occasionally students co-constructed claims in conjunction with discussion partners. The prevalence of opposition and the relatively rare occurrence of integrations in this kind of discussion setting (persuasion-based, assigned positions) coincides with empirical results of similar studies (Felton et al., 2009; Johnson & Johnson, 1985, 2009, 2013; Simonneaux, 2001). A strong impact of discussion formats on the type of discourse was also found in a qualitative study in 10th grade civic education classes by Thormann (2012a, 2012b). As Leitão (2000) has pointed out “the main impact of opposition on the speakers’ acquisition of knowledge is to improve explicitness and create a privileged setting for the emergence of justification and explanation in children’s talk (Pontecorvo, 1993)” (p. 341). Moreover, the results found in this study lead to the suggestion that discussions with assigned positions do not lead to the weighting of arguments and conflicting values, which would be relevant for decision-making and reflective judgement (Kock, 2007; Nussbaum & Edwards, 2011). Thus, learning goals like the elaboration of judgements on political issues would not be well suited for this type of discourse, unless triggered additionally by



letting students work on the weighing of arguments after the discussion.

The modified model of argument reappraisal (Leitão, 2000) implies that three discourse modes and accordingly at least three moves per argumentation are required to critically evaluate an argument. Thus, it is problematic that nearly 40 % of the argumentations were of the one-sided type. In these cases, arguments were articulated but students did not critically evaluate them. Moreover, within all classes, there was an enormous variance in the number of moves referring to arguments. Whereas the median number of replies to arguments was only one move, argumentations with up to 20 moves could also be observed. A great disadvantage is that good points can get lost if the other discussants do not refer to and value important statements. This observation corresponds with findings of Thorman (2012a, 2012b) in the context of student-centered discussions without teacher intervention. To deal with this problem, the teacher and the observing students can take notes and refer back to these "lost moments."

However, this phenomenon leads to the question why students focus extensively on one argument and do not make any reference to another. Three explanations occurred to the author. First, cognitive challenge: argumentative discourse is cognitively challenging because "at the same time that one is processing and evaluating input from the conversational partner, one must be formulating an effective response that meets discourse goals" (Kuhn & Udell, 2007). Felton and Kuhn (2001) found that the use of discourse strategies in adolescents is less strategic than in adults. They "appear more preoccupied with merely producing argumentative discourse - that is [...] speakers must take turns, must address the topic, and should try to articulate their views adequately" (p. 151). It may be the more secure and easier way to externalize new arguments (maybe thought out internally beforehand) than to reply to arguments of the other discussants. Second, strong arguments: some arguments may appear so plausible and justified that discussants simply have nothing to oppose or to elaborate. In such cases, more time is needed to think about critical points. Third, social and personal causes: opposing classmates in discussions may make some students feel uncomfortable and prevent them from criticizing arguments. In each class, there were different constellations of active discussants in the fishbowl. Therefore, it is possible that students differed in their argumentativeness. For instance, some students may prefer articulating arguments (prepared before-hand) to opposing classmates. Students with a more competitive discussion style (desire to "win" the discussion) may intimidate others by criticizing them.

Regarding the sequential structure of argument reappraisal, five patterns could be identified (section 5.3) and have been illustrated by transcript excerpts (section 5.4). Arguments were addressed significantly more often than expected by counterarguments. However, the sequence argument -> counterargument -> integration

(as indicated in the title of this paper) does not characterize the discussions well. Instead, students reacted with integrative replies when they felt their argumentation met with direct critique (rebuttal) but not when it was criticized indirectly (counterargument). Moreover, it is interesting that both iterative patterns, namely co-construction -> co-construction and disagreement -> disagreement, were observed exclusively in the same two classes. Whereas co-construction implies shared reasoning and argumentation for the same position, sequences of disagreement may be interpreted as bossiness or persistence or as emotionally charged sequences. Thus, it can be assumed that students in these classes perceived the discussion situation more competitively: in co-construction, we reason together to build up "our" position and in disagreements we oppose the utterances of our opponents in a direct and maybe more radical way than in counterarguments or rebuttals.

From a teaching point of view, the typology of argumentations (one-sided, critical, responsive-integrative and responsive-dismissive) may be a useful tool to diagnose and scaffold argument reappraisal in classroom discourse. Generally, it is desirable that students not only externalize and accumulate arguments but also challenge them and respond to critique. Thus, the AOR pattern represents not only an analytic tool but also defines the discourse modes that are required for the critical evaluation of arguments. Teachers as well as students could benefit from analyzing transcripts or video recordings of classroom discussions regarding the use of different discourse modes and the number of moves dedicated to arguments. However, it may not be appropriate to evaluate the quality of argumentation on the adherence to a rigid three-step-model. Argumentative transactivity should be seen as an important and necessary condition for argument reappraisal in classroom discussion but more criteria are needed to evaluate the quality of discussions (e.g., content-based criteria as proposed in Petrik, 2010). To avoid idiosyncrasies due to the specifics of the subject-matter it would be valuable to replicate findings based on other discussion topics. Further studies are needed to explore and compare effects of different types of argumentations on learning outcomes.

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