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How Can Social Understanding in Adolescence Be Enhanced? Observations Based on Short-Term Conversation-Based Training

Jak rozwijać rozumienie społeczne u młodzieży? Wnioski z krótkoterminowego treningu opartego na konwersacji

KEYWORDS
social understanding, adolescence, theory of mind, conversation-based training

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rozumienie społeczne, adolescencja, teoria umysłu, trening oparty na konwersacji

ABSTRACT

Adolescence is a developmental period characterized by significant changes and intensified social interactions. The role of parents decreases and the importance of peer groups increases. Peers, especially friends, may deliver instrumental aid and emotional support; they may also promote a sense of security and be a significant source of affection and intimacy. Additionally, peer relations provide a testing ground for exercising many competencies necessary in complex

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social situations, such as social problem-solving, conflict resolution, and negotiation. The intensified contact with peers may also enhance adolescents' social understanding skills. Therefore, practicing social understanding skills within a peer group may enhance one's social functioning in adolescence. For these practical and educational reasons, we aimed to confirm the effectiveness of conversation-based training in these skills and identify what factors potentially support or hinder its effectiveness.

Social understanding, the ability to understand oneself and others in various social situations, develops in childhood and adolescence. As this ability impacts satisfactory social functioning in adolescence and develops in a social context, a training process was proposed with the aim of enhancing the development of this ability based on the social-constructivist approach to social understanding. The efficacy of the training to enhance the understanding of one's own and others' mental states was verified using a sample of 65 Polish adolescents (mean age: 14.6 years). They participated in nine one-hour sessions and were divided into an experimental group (social understanding, $n = 26$) and two control groups: attention/perception ($n = 17$) and film/text literacy ($n = 22$). Although no direct effect of the theory of mind training was found, the results provided important observations for further work on adolescent social understanding training programs.

ABSTRAKT

Adolescencja to okres rozwojowy charakteryzujący się intensyfikacją i znaczącymi zmianami w obszarze kontaktów społecznych. W okresie tym maleje rola rodziców, wzrasta natomiast znaczenie grup rówieśniczych. Rówieśnicy, a zwłaszcza przyjaciele, mogą zapewniać wsparcie instrumentalne i emocjonalne oraz być znaczącym źródłem poczucia bezpieczeństwa, uczuć i intymności. Dodatkowo relacje rówieśnicze stanowią swego rodzaju poligon doświadczalny dla ćwiczenia wielu kompetencji niezbędnych w złożonych sytuacjach społecznych, takich jak radzenie sobie z problemami społecznymi, rozwiązywanie konfliktów czy negocjacje. Większa intensyfikacja kontaktów z rówieśnikami może również zwiększyć zdolność nastolatków w zakresie rozumienia społecznego. Z tego powodu ćwiczenie umiejętności rozumienia społecznego w grupie rówieśniczej może poprawić funkcjonowanie społeczne młodzieży. Mając na uwadze powyższe założenia praktyczne i edukacyjne, podjęto próbę potwierdzenia skuteczności treningu opartego na konwersacji w zakresie rozumienia społecznego z intencją

zidentyfikowania czynników potencjalnie wspierających lub zmniejszających tę skuteczność.

Rozumienie społeczne, czyli umiejętność rozumienia siebie i innych w różnych sytuacjach społecznych, rozwija się w dzieciństwie i okresie dojrzewania. Ponieważ umiejętność ta wpływa na efektywne funkcjonowanie społeczne nastolatków i rozwija się w kontekście społecznym, zaproponowano trening, którego celem jest stymulowanie rozwoju tej umiejętności w oparciu o społeczno-konstruktywistyczne podejście do rozumienia społecznego. Skuteczność treningu doskonalącego rozumienie własnych i cudzych stanów mentalnych zbadano na próbie polskiej młodzieży (N = 65, średni wiek = 14,6 lat). Adolescenci wzięli udział w dziewięciu półtoragodzinnych sesjach, w podziale na trzy grupy: jedną eksperymentalną (rozumienie społeczne, n = 26) i dwie grupy kontrolne – percepcja–uwaga (n = 17) i literatura–film (n = 22). Pomimo że nie stwierdzono bezpośredniego wpływu treningu teorii umysłu, wyniki dostarczyły ważnych obserwacji do dalszych prac nad treningiem rozumienia społecznego wśród młodzieży.

Social Understanding and Social Functioning in Adolescence

Social understanding (SU) is a broad concept that describes a person's understanding of the social and psychological world (Carpendale, Lewis 2006). The first signs of such understanding are observed early in life (Astington, Hughes 2013; Białecka-Pikul et al. 2022). For instance, when children come to understand false beliefs—usually at the age of four years (Wellman et al. 2001)—it is considered a significant milestone in the development of this ability. Nonetheless, SU develops far beyond the preschool years into middle childhood and adolescence (Devine, Lecce 2021). As children age, their theory of mind develops from an intuitive to a reflective understanding of self and others and transforms into an ability based on a recursive, interpretative understanding of minds (Astington, Hughes 2013).

SU enables one to understand and deal with ambiguity in social situations (Białecka-Pikul et al. 2017), to make flexible and differentiated interpretations of situations or information (Weimer et al. 2017), understand non-literal language (e.g., jokes, sarcasm, metaphors or hints; see Happé 1995; Hauptman et al. 2023), and to persuade others (Kołodziejczyk, Bosacki 2016). The development of SU can be advanced through interactions with others and through

language, which entails communication and understanding (Carpendale, Lewis 2020). Indeed, many lines of research confirm the significance of social influence on the development of theory of mind in children (Hughes, Devine 2015b) and adolescents (Bosacki 2021; Hughes, Devine 2015a).

Research also indicates the positive reciprocal dependency between SU in children and their social functioning. For example, children who are better at SU can successfully join peer groups, harmoniously lead them (Peterson et al. 2007), and defend their opinions of others (Peterson et al. 2016) and they tend to be popular in their groups (Slaughter et al. 2002). More advanced SU seems particularly important in adolescents' navigation of the increasingly complex social world (Bosacki 2021). For example, adolescents need to understand persuasive messages because it enables them to resist information that is inconsistent with their values and needs or to guard against attempts at manipulation (Castonguay 2022). They also need to understand non-literal language (an ability based on both linguistic and social cognitive mechanisms; see Hauptman et al. 2023), which is commonly used in many social situations and is crucial to communicative success.

Perspective-taking, the cognitive process of understanding another's point of view, enables individuals to engage in more flexible social behavior and to moderate their social relationships (Van der Graaff et al. 2018; Derksen et al. 2018). Engaging in social perspective-taking can promote high-quality relationships and successful friendships (Flannery, Smith 2017). Moreover, higher SU abilities are related to building friendships among adolescent girls (Gazelle et al. 2022), satisfactory relationships with peers in adolescent boys (conceptualized as higher peer attachment) (Białecka-Pikul et al. 2021), and lower social dissatisfaction and loneliness in both genders (Bosacki et al. 2020; Caputi et al. 2017).

Additionally, lower levels of SU may be associated with adverse outcomes. For example, in adolescents who have been exposed to violence, lower SU was related to externalizing problems (Heleniak, McLaughlin 2020). A recent meta-analysis revealed that theory of mind deficits are associated with higher suicidality in clinical samples of adults and adolescents (Nestor, Sutherland 2022). Not forejudging the direction or nature of this relationship (causal or merely

correlational), the authors suggest that theory of mind may be targeted and modified with interventions to reduce this risk in vulnerable populations.

Social understanding is critical to navigating the increasingly complex social world of adolescents (Weimer et al. 2021) and dealing with the higher vulnerability to mental health problems stemming from hormonal, neurological, social, and psychological changes that cumulate in adolescence (Blakemore 2019). Therefore, it is reasonable to attempt to support adolescents in developing SU, not only in atypically developing or especially vulnerable groups, but also in typically developing youths representative of the general population. Such training could be a protective factor in this exceptionally dynamic period of life rich in affective-social engagement (Crone, Dahl 2012).

Moreover, there is convincing evidence that adolescence is a time of further improvement of SU, as illustrated by both cross-sectional (Gabriel et al. 2021) and longitudinal studies (Białecka-Pikul et al. 2020), even though this progress is sometimes very subtle (Stępień-Nycz et al. 2021). Furthermore, an analysis of adolescents' performance level in different measures of advanced theory of mind shows that there is still room for improvement, as no ceiling effect was observed in many commonly used tasks measuring different aspects of social cognition (Białecka-Pikul et al. 2016). Therefore, it seems plausible to ask how such interventions should be prepared to enhance adolescents' abilities and what kind of training is effective regarding SU.

How Should Social Understanding Be Practiced in Adolescence?

Even though SU develops naturally through social contact with one's family, school, and peer groups, strong evidence indicates the effectiveness of theory of mind training in different groups. A meta-analysis of theory of mind training programs for children (both typically developing children and those with autistic spectrum disorder) tested in controlled studies (Hofmann et al. 2016) showed a moderate positive effect on children's theory of mind. Notably, the positive effect of social cognition training was observed not only during early childhood, but also during middle childhood and adulthood, as

indicated by a recent meta-analysis of studies with healthy participants (Roheger et al. 2022).

The training programs included in the meta-analyses covered many procedures (e.g., narratives, conversations, discussions, videos, role-playing, corrective feedback, and sociodramatic play). It was impossible to analyze differences in efficacy according to the specific content of the training program. However, many studies have confirmed the effectiveness of programs based on conversation and reflecting on or discussing the mental states of oneself and others. For example, Lecce et al. (2014) found that the exposure to conversations rich in mental states improved SU in 9–10-year-old children. Meanwhile, Bianco et al. (2016) aimed to identify the mechanism underlying this improvement and concluded that providing scaffolding for a more mature understanding of social situations is essential. This claim aligns with the socio-constructivist approach to social understanding development, emphasizing the significance of conversations that raise the opportunity to share thoughts and differentiate, confront, and coordinate one's perspective with that of others (Carpendale, Lewis 2015).

The above-mentioned meta-analyses (Roheger et al. 2022) did not include training programs for healthy adolescents due to the scarcity of studies on this age group. Indeed, research on SU development and its enhancement is mainly conducted on children or preadolescents; studies that have assessed the influence of social skill training programs on SU in adolescents with autistic spectrum disorder are an exception (Lecheler et al. 2021; Zheng et al. 2021). This scarcity may be related to the fact that researchers' interest in adolescence in the context of SU development only recently started to grow (Devine, Lecce 2021). However, the significance of SU for adolescents' social functioning and mental health makes promoting and training SU abilities in this age group very reasonable.

The Current Study

Short-term group workshops are an effective and attractive form of training for adolescents. Active participation in training sessions, discussions, narratives and shared reflections on issues related to mental life allow for the shared construction of SU by the attendees,

thus reflecting the socio-constructivist view of social understanding development (Carpendale, Lewis 2006). The formal aspects of the sessions conducted for the present study relied on the assumption that the natural school environment would be adolescent-friendly and would guarantee the ecological validity of the study. The content of the sessions was mainly based on the authors' experience and the results of many previous studies (following evidence-based practice). However, the content was also inspired by three programs: the proposal of Bosacki (2008), which aims to stimulate the youths' social reflectivity and understanding of themselves and others; the Penn Resiliency Program (Brunwasser et al. 2009), which aims to promote optimism and realistic attitude toward discomfort or failure; and the Freiburger Anti-Gewalt-Training (Fröhlich-Gildhoff 2006), which aims to prevent aggressive behavior among adolescents by enhancing their social and emotional competence.

Our research tested the efficacy of social understanding training in adolescents. We adopted a research design with one experimental group (social understanding group) and two control groups, which participated in training focused on other processes (attention/perception in one group and text/film literacy in the second). All adolescents participated in the pre-test, training sessions, and post-test. We hypothesized that in the post-test, the training group participants would present a higher level of social understanding than students from either control group, even if some progress was observed in all groups.

Method

Participants

A total of 100 students from a junior high school in Krakow, Poland were recruited to participate in the study. However, the final post-test data were unavailable for 35 students, so we excluded them from the analysis. Little's MCAR test revealed that the missing data were missing completely at random ($chi^2 = 11.92$, $df = 11$, $p = .370$); thus, we suppose that these post-test results were not inevitably related to the distribution of other variables. Moreover, the groups with complete and incomplete data did not differ at T1 in any variable

related to social understanding (Wilks' lambda = .92; $F_{(6,90)}$ = 1.29; p = .269), gender (chi^2 = 0.02, df = 1, p = .766), or age ($F_{(1,98)}$ = 1.90; p = .171).

All subsequent analyses are reported for the limited group (N = 65; 37 girls and 28 boys), aged 12.67–15.33 years at T1 (M = 14.31, SD = 0.53) and 13.08–15.67 years at T2 (M = 14.68, SD = 0.52). The participants were randomly divided into three subgroups with three training programs: one experimental group and two control groups. The training was conducted and post-test data were provided by 17 participants in the first control group (C1: attention/perception workshop), 22 participants in the second control group (C2: literacy/film workshop), and 26 participants in the experimental group (E: social understanding workshop).

Procedure

This study was part of a larger longitudinal project (*Psychological Selves in Social Worlds: Attachment, Theory of Mind, and Self-Concept in Adolescence*) conducted at the Institute of Psychology and the Institute of Applied Psychology at Jagiellonian University, Krakow, Poland. The project received the approval of the Research Ethics Committee of the Institute of Psychology, Jagiellonian University.

The study was planned as a natural experiment, with two measurement time-points separated by the training sessions. T1, which included the pre-test assessment, took place in February 2018. T2, which included the post-test, was conducted in June 2018.

An initial meeting was conducted to present the purpose of the training as promoting skills that young people need in the 21st century. Next, written consent was obtained from parents and students. The pre-test and post-test measures (see below for details) were administered in group form during school. Each of the testing sessions lasted about 45 minutes. During the second meeting, all participants were randomly assigned to one of three training groups (students drew lots from a box). Each group participated in nine one-hour sessions at approximately one-week intervals (following the organization of the school year).

In each group, the training sessions took a similar course. Each session started with a short warm-up aimed at activating the group

and creating a positive atmosphere, which was followed by the main activity; each session ended with a summary. All training sessions took place in school during regular school classes. The sessions and pre- and post-test assessments were conducted by trained fourth- and fifth-year psychology students and were supervised by the expert from the project group.

The training provided to Group C1 (attention/perception workshop) involved cognitive processes such as perception, attention, memory, and motor coordination skills. Group C2 (literacy/film workshop) participated in meetings for improving the ability to analyze literary texts and films. Both control groups therefore practiced competencies necessary for young people, but not related directly to social understanding. Group E (the experimental group) participated in a social understanding workshop and practiced skills such as understanding oneself and others, perspective-taking, empathic sensitivity, persuasion, and perceiving and understanding ambiguity.

In the experimental group, the main part of each session included active scenarios preceded by a short introduction to the session's main topic. Each scenario required the active participation of all students (supervised and assisted by the trainer), followed by a discussion of and reflection on their experience, feelings, and thoughts (moderated by the trainer). The full content of all scenarios is available in Polish (Białecka-Pikul et al. 2016).

Measures

In the pre-test and post-test, three measures of social understanding ability were used: the Self-Persuasion Story Task (Kołodziejczyk, Bosacki 2016), the Flexibility and Automaticity of Social Cognition (FASC; Hayward, Homer 2016), and the Modified Hinting Task (MHT; Corcoran et al. 1995; Polish version: Maciurzyńska et al. 2011). All the participants' responses were collected by a paper-and-pencil method during the group sessions. A detailed description of all tasks, including reliability values, model stories, and coding systems, can be found in Białecka-Pikul et al. (2021).

The Self-Persuasion Story Task consists of four stories that describe situations in which the main character needs to change their attitude toward a particular situation, person, or activity and to

convince themselves of something (e.g., learning French or eating less sweets). After reading each story, the participants were asked to provide possible strategies for self-persuasion (i.e., how the character could convince themselves to change their attitude) and to explain how the proposed strategies could be effective. All answers were analyzed in terms of psychological complexity (i.e., whether they referred to behaviors or mental states that differed in complexity, such as perception, desires, motives, emotions, or beliefs) and were scored on a scale from 0 to 3 points. Two indices were calculated: the psychological complexity of the proposed strategies (SPPS) and the psychological complexity of the explanations (SPES). Two randomly selected stories were used in the pre-test, and the other two were used in the post-test. The mean value calculated for the two stories was used in the analysis for both indices.

The Flexibility and Automaticity of Social Cognition utilizes comic-style cartoons that depict ambiguous social stories, sometimes accompanied by written dialogues and narrator's comments. The participant follows the cartoon stories and explains the behavior of the protagonist(s). In this study, we used only the indicators for the flexibility of social cognition, understood as the ability to perceive many different aspects of social situations, as indicated by mental state reasoning. The number and complexity of mental terms used in the task are related to the multidimensionality and depth of social reasoning (Hayward, Homer 2016).

The analyses took two indices into account: the number of mental state responses (FAMSR; i.e., the number of utterances containing unique mental states) and the number of mental state terms (FAMST). As the length of the answers was unlimited, each person could use any number of state terms and the possible scores in both indices had no upper limit. Three randomly selected stories were used in the pre-test, while two different stories were used in the post-test. For each index, the mean number of mental state terms/mental state responses from all the stories at a given time-point was calculated and used in the analysis.

The Modified Hinting Task includes short stories that describe a social situation and a statement by the protagonist that contains an indirect request for information. The original individual, interview-based procedure was modified into a paper-and-pencil

version that can be used in a group format. After reading each story, the participant is asked to explain the exact meaning of the non-literal utterance. This requires the participant to think about the protagonist's thoughts. The psychological complexity of the answers is scored on a scale of 0–4 points, considering both the appropriateness of the answer and the perspective expressed (egocentric/realistic vs. complex/interpersonal). In the pre-test, three stories were randomly selected; in the post-test, three different stories were used. At both time-points, the mean of the scores from all three stories was calculated and used in the analysis.

Results

Analytical Strategy

As mentioned above, data from students who did not participate in the post-test were removed from the analysis. The remaining data contained some missing items in specific tasks (one observation with one missing datum, five with two missing data, and two with three missing). The result of Little's MCAR test was not significant ($chi^2 = 46.29$, $df = 39$, $p = .197$); therefore, we may conclude that the missing data were random. The single missing datum was imputed using the expectation-maximization algorithm.

In the preliminary step, we conducted an exploratory factor analysis to explore the structure of the social understanding measures. The principal axis method for extraction and an eigenvalue of 1 were used as criteria for the number of factors. The analysis of tasks at T1 revealed four factors, mainly grouping items related to specific measures. As this analysis is not central to the training issue, we do not present it here in detail. However, based on the result, we decided to use separate indices from the tasks without grouping them into factors.

In the main analysis, we calculated descriptive statistics for the measures of social understanding used at T1 and T2, while also exploring gender differences and group differences (the experimental group vs. the two control groups) with MANOVA. Next, we conducted a series of repeated-measure ANOVA (2 × 3, time of assessment × group) to analyze the developmental change between T1 and T2 and the differences in the changes between the three groups.

Descriptive Statistics

Descriptive statistics for all social understanding indices were calculated separately for each training group and both genders. The results are provided in Table 1.

Table 1. Means for social understanding indices at the two time-points (SD in parentheses)

Group	SPPS		SPES		FAMSR		FAMST		MHT	
	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
Girls (n = 37)	1.53 (0.56)	1.30 (0.62)	1.55 (0.57)	1.14 (0.64)	1.19 (0.66)	1.16 (0.39)	1.63 (0.97)	1.65 (0.81)	2.40 (0.88)	2.54 (0.79)
Boys (n = 28)	1.54 (0.51)	1.17 (0.38)	1.41 (0.64)	0.93 (0.56)	0.83 (0.51)	0.93 (0.43)	1.23 (0.88)	1.29 (0.76)	2.35 (1.04)	2.09 (1.03)
Training group E (n = 26)	1.60 (0.58)	1.31 (0.45)	1.44 (0.65)	1.05 (0.57)	1.13 (0.72)	1.08 (0.40)	1.53 (1.11)	1.42 (0.81)	2.37 (0.95)	2.48 (0.82)
Training group C1 (n = 17)	1.62 (0.60)	1.24 (0.53)	1.53 (0.51)	1.00 (0.56)	0.86 (0.52)	1.12 (0.42)	1.23 (0.84)	1.76 (0.85)	2.21 (0.86)	2.20 (1.18)
Training group C2 (n = 22)	1.39 (0.41)	1.16 (0.62)	1.52 (0.63)	1.07 (0.71)	1.08 (0.56)	0.98 (0.45)	1.55 (0.82)	1.39 (0.77)	2.52 (1.02)	2.30 (0.83)
Total	1.53 (0.54)	1.24 (0.53)	1.49 (0.60)	1.05 (0.61)	1.04 (0.62)	1.06 (0.42)	1.46 (0.95)	1.50 (0.81)	2.38 (0.94)	2.35 (0.92)

Abbreviations: E – social understanding workshop; C1 – attention/concentration workshop; C2 – literacy/film workshop; SPPS – psychological complexity of the proposed strategies in the Self-Persuasion Story Task; SPES – psychological complexity of the explanations in the Self-Persuasion Story Task; FAMSR – number of utterances containing unique mental states in the FASC test; FAMST – number of mental state terms in the FASC; HT – understanding of hints

The 2 × 3 (gender × training group) MANOVA for the T1 measures of social understanding revealed no significant main effect of the training group (Wilks' lambda = .87; $F_{(10,110)} = 0.83$; $p = .603$) and no significant main effect of gender (Wilks' lambda = .88; $F_{(5,55)} = 1.48$; $p = .212$). However, contrast analysis for single variables revealed a significant difference between boys and girls in FAMSR ($F_{(1,59)} = 4.95$; $p = .030$, $\eta_{p2} = .08$), with the girls producing more such utterances in their answers than the boys.

The 2 × 3 (gender × training group) MANOVA of the T2 measures of social understanding revealed no significant main effect of the

training group (Wilks' lambda = .90; $F_{(10,110)} = 0.62$; $p = .795$) and no significant main effect of gender (Wilks' lambda = .85; $F_{(5,55)} = 2.00$; $p = .093$). However, contrast analysis for single variables revealed a significant difference between boys and girls in two indices of SU: again in FAMSR ($F_{(1,59)} = 4.42$; $p = .040$, $\eta_{p2} = .07$) and in the understanding of hints (MHT; $F_{(1,59)} = 4.30$; $p = .043$, $\eta_{p2} = .07$). The girls scored higher than the boys in both indices.

The repeated-measure ANOVA included the two assessment times as a within-subject factor and the three training groups as a between-subject factor. The outcomes revealed a significant effect of the time of measurement for two SU indices related to self-persuasion: SPPS ($F_{(1,62)} = 12.73$; $p < .001$, $\eta_{p2} = .17$) and SPES ($F_{(1,62)} = 23.77$; $p < .001$, $\eta_{p2} = .28$). A decrease from T1 to T2 was observed in both indices. For the three remaining SU indices, the main effect of the time of assessment was not significant for FAMSR ($F_{(1,62)} = 0.22$; $p = .640$), FAMST ($F_{(1,62)} = 0.48$; $p = .492$), or MHT ($F_{(1,62)} = 0.06$; $p = .803$). Therefore, the hypotheses that social understanding would develop over time and that the positive change in the SU training group would be more pronounced were not confirmed. On the contrary, a decrease was observed in the two indices of SU over time, regardless of the type of training.

No significant interaction effect (group × time) was observed for any of the SU indices. However, pairwise comparisons revealed that for SPPS, a significant decrease was observed in Groups C1 ($F_{(1,62)} = 5.67$; $p = .020$, $\eta_{p2} = .08$) and E ($F_{(1,62)} = 4.74$; $p = .033$, $\eta_{p2} = .07$). Additionally, there was a significant increase in FAMST scores from T1 to T2 in Group C1 only ($F_{(1,62)} = 4.54$; $p = .037$, $\eta_{p2} = .07$), with no significant changes in the other groups.

Discussion

Summary of Results

The aim of this intervention study was to determine whether social understanding training is an efficient method to support SU development during adolescence. The outcomes did not confirm the hypothesis that students who receive SU training demonstrate a higher level of SU than students from control groups (attending

attention/perception and text/film literacy training). In other words, the efficacy of the applied program was not validated.

The first step of analysis confirmed the absence of differences in the level of social understanding between students assigned to the different types of training during the pre-test, thus confirming the random selection for each group. However, contrary to expectations, no significant differences were observed between the groups in the post-test, indicating that students attending different types of training presented similar levels of social understanding before and after the training. Therefore, the students could not be differentiated regarding their level of social understanding based on the type of training they received.

Possible Explanations for the Lack of Effectiveness of Social Understanding Training

The lack of differences between the three types of training may be related to the characteristics of the training procedures used. The conversation-based SU training has been found to be efficient in children (Bianco et al. 2016; Lecce et al. 2014) and preadolescents (Caputi et al. 2021); therefore, we expected its efficacy to also be demonstrated among adolescents. Through sharing and discussing one's feelings and beliefs, adolescents may learn to understand their own and others' mental states, recognize others' perspectives, and understand ambiguity and complex emotions as motives for behavior. These abilities fall within the general concept of social competencies regarding societal rules and standards, social perception, self-reflection, and receiving feedback—and we cannot exclude the possibility that social competence played a role here (Gómez-López et al. 2022).

Firstly, the participants' social competencies were not measured; they could have mediated the development of social understanding, thus influencing the efficacy of the intervention. Secondly, the types of training planned in the control groups were not free of social aspects. For example, the text/film literacy group also discussed social issues connected with the stories, which may have influenced their social understanding. Evidence suggests that reading literary fiction enhances social understanding (Mumper, Gerrig 2017), even with a rapid onset of positive effects (Van Kuijk et al. 2018). The attention/

perception group participated in many exercises demanding cooperation within a group and competition between two or three small groups. Thus, all three training activities referred to general social competencies, including SU. We now understand that metacognitive training was presented in the experimental group, social skills training in the attention/perception group, and indirect SU training in the text/film literacy group.

Thirdly, if engaging in social interactions during training sessions increases SU, we should expect to observe an increase in the whole group. However, for the whole group, the analysis not only revealed no increase in any SU measures between the pre-test and the post-test, but in fact showed a significant decrease in self-persuasion understanding between T1 and T2. We could perhaps attribute this decrease to the specific circumstances of the post-test measurement likely biasing the results. The second measurement (in June) was conducted at the end of the school year, when students' attendance is lower (approximately one third of the participants did not provide data during the post-test assessment). Moreover, the coming summer vacation visibly influenced students' moods and motivation to participate in the post-test session. We noticed more illegible or frivolous answers in the post-test than in the pre-test. Moreover, as the post-test was provided by the same researchers who led the training sessions, the adolescents might not have thought of this last meeting as a serious test, but instead as another training session.

Other factors that could have influenced the efficacy of the training and post-test results are the participants' characteristics and group dynamics during the sessions that the trainers observed in all groups. The youths sometimes presented oppositional behavior typical of this developmental period, showing negativism or an intentional lack of cooperation with adults (Twenge 2017). At the group level, resistance (understood as actions showing disapproval and discord for suggested activities) may have been responsible for the effectiveness of the training. Resistance during a training session was manifested passively (as a low level of activity or silence) and actively (as questioning or undermining the trainer's competence) (see also Branka 2010). We observed such behaviors during the sessions and found that several participants (randomly assigned to the training groups) were in conflict with each other, as confirmed later by their teachers.

This situation could have impacted the group dynamics in all three training groups.

The last issue that should be considered relates to the measures of SU. All such measures were related to different aspects of social cognition, and they did not converge in a common underlying factor. This is similar to the findings of an analysis employing the same methods with a larger group of adolescents (Białecka-Pikul et al. 2021). Indeed, despite the availability of many measures to assess SU in middle childhood and adolescence (usually referred to as advanced theory of mind measures), convincing evidence is still lacking regarding their correlation to some higher-order factors of advanced theory of mind (Białecka-Piku et al. 2021; Osterhaus, Bosacki 2022; Warnell, Redcay 2019).

Furthermore, there remains a need to analyze the methods that assess not only their underlying constructs, but also their reliability and developmental sensitivity (Białecka-Pikul et al. 2021; Stępień-Nycz et al. 2021), as it seems plausible that different aspects of social understanding may present different developmental trajectories—later in life as well as in childhood (Osterhaus et al. 2016; Wellman, Liu 2004). Therefore, the measures we used, combined with the other factors, might not have been sensitive enough to capture SU changes over only five months.

Importance of Social Understanding Training for Mental Health in Adolescents

Social understanding is an important factor in adolescents' social lives, and it has practical implications for their daily functioning. The first practical aspect of social understanding is sharing emotions and giving consolation. Many studies on mental health in adolescents conducted during the COVID-19 pandemic show the importance of social relations and social support (e.g., Jones et al. 2021). A lack of such support might be related to the large decrease in adolescents' social wellbeing in Poland and worldwide during this time (Racine et al. 2021; Sikorska et al. 2021). Social contact during the pandemic was considered a supporting factor for adolescents' resilience and wellbeing, as it buffered against psychopathology (Rodman et al. 2022) and reduced feelings of loneliness (Nearchou et al. 2020).

The second practical aspect of using one's social understanding ability is conflict resolution. The social cognitive perspective in research underscores parents' and adolescents' interpretations of and justifications for disputes (Smetana 2011). Identifying one's own and others' intentions in peer conflicts may buffer against aggressive behavior during social conflicts (Dunn et al. 2022), as advanced theory of mind enables adolescents to adequately understand others' intentions and behaviors and to solve social conflicts without violence.

The significance of SU for social support of friends and peaceful conflict-solving behavior with peers and adults emphasizes the importance of social understanding training. Therefore, further efforts should be undertaken to devise more efficient SU training programs for adolescents. Taking into account the results of our study and the confounding factors that we observed, one way to increase the efficacy of SU training could involve working harder to control such factors. This could be done, for example, by considering external circumstances that may influence the process, such as the organization of the school year and school work, the management of group processes during training sessions, the elimination of distracting factors during assessments, and efforts to increase students' motivation and engagement in this process (e.g., through individual rather than group assessment or forming smaller groups for the pre- and post-tests).

Additionally, as the previous meta-analysis related to training efficacy suggests (Roheger et al. 2022), lengthening single sessions and condensing the whole process chronologically—in other words, using longer and more frequent training sessions, thereby making the entire process more intense and shorter—might also increase the efficacy of the training. Furthermore, as the components of social understanding are highly differentiated, focusing on a narrower range of components might allow for a better description of them instead of discussing many different issues related to SU.

Moreover, the control groups should be more differentiated so that the specific influence of social understanding can be assessed more precisely. For example, one group could engage in social interactions related to SU, another group could engage in social interactions and discussions that are not related to social understanding,

and yet another group could not engage in additional social interactions (e.g., a group with individual cognitive training or with no training before the post-test). Finally, considering additional factors that could potentially influence the efficacy of training for individual participants (e.g., social competence, cognitive factors, or motivation level) could further enhance the assessment of the efficacy of training and analysis of the confounding factors in more detail.

As directions for future research, we propose to improve our previous research plan. First of all, the program should be a minimum of one school year long in order to develop social understanding in adolescents, because this would provide a greater possibility for significantly increasing this competence. Secondly, the project leaders should be more strictly prepared in order to achieve a unified method of training. And lastly, the efficacy of training should be analyzed using assessment of individual level of social understanding at the beginning of the project.

Conclusions

Although our study failed to enhance adolescents' social understanding through the training program, we cannot conclude that all such training programs are fruitless and unnecessary. Considering the growing prevalence of mental health problems in adolescence and the importance of social understanding for youths' social lives, we should continue attempting to construct effective training programs. The failure in the current study may be a valuable lesson for future studies in this field.

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