

## WHAT DO TEENAGERS AND YOUNG ADULTS THINK AND FEEL ABOUT THEIR PEERS WITH CANCER? A QUANTITATIVE AND QUALITATIVE ANALYSIS OF EXPLICIT AND IMPLICIT PREJUDICES

Sławomir Trusz and Hanna Stępniewska-Gębik

Institute of Education Sciences, Pedagogical University of Kraków

The social stigma of cancer is a powerful source of stereotyping and prejudice against people affected by oncological disorders. Two cross-sectional studies attempted to (1) provide a formal and content characteristic of the stereotype of teenage cancer patient and (2) analyze explicit and implicit prejudice against them. In the first study, 2,370 middle school students proposed open-ended descriptions and quantified 50 attributes representing physical appearance, cognitive, task-oriented, social, and emotional functioning of the teenage cancer patient. In the second study, 207 undergraduate students of education completed the Implicit Association Test, which contrasted the teenage cancer patient with a teenager as a reference category. A content analysis of 11,191 open-ended descriptions and exploratory factor analysis of 50 attributes showed that teenage cancer patients were characterized in the emotional, social, and physical appearance domain. The IAT revealed that teenagers with cancer automatically induced moderate negative prejudice not linked with similarly negative explicit prejudice. Negative explicit and implicit prejudice suggests that teenagers with cancer may be omitted or disfavored by classmates and teachers, therefore they require special treatment in school and out-of-school environments. The findings and their practical implications were discussed in light of theories of stigmatization, stereotyping, and prejudice against cancer patients.

**Keywords:** cancer; teenager/young adult; stigma; explicit/implicit stereotype and prejudice.

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SŁAWOMIR TRUSZ, <https://orcid.org/0000-0002-7572-018X>; HANNA STĘPNIIEWSKA-GĘBIK, <https://orcid.org/0000-0003-1213-8827>. Correspondence concerning this article can be addressed to HANNA STĘPNIIEWSKA-GĘBIK, Instytut Nauk o Wychowaniu, Uniwersytet Pedagogiczny w Krakowie, ul. Ingardena, 30-060 Kraków, Poland; e-mail: [hanna.stepniewska-gebik@up.krakow.pl](mailto:hanna.stepniewska-gebik@up.krakow.pl).

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In Europe and in the USA, respectively, 20,000 (Stewart & Wild, 2014) and 11,000 (Steliarova-Foucher et al., 2018) new cases of cancer are registered each year among teenagers and young adults.

Approximately 65% of them experience long-term or delayed negative neuro-cognitive, psychosocial, emotional, and behavioral consequences of oncological disease and treatment (Armstrong & Reaman, 2005; Donnan & Webster, 2015; Wakefield et al., 2010). Teenage cancer patients (TCP) usually lose two years of institutional education. Absence at school is connected with a decrease in self-confidence and interest in schoolwork (Wakefield et al., 2010).

In contrast, school education maintained under treatment, increases the sense of life quality and is a significant predictor of further educational and professional career of child/teenage patients (Armstrong & Reaman, 2005). However, while various teaching strategies (e.g., individual tutoring) could be implemented in hospital conditions, intensification of social bonds with classmates seems unlikely due to hospital rigor.

Furthermore, cognitive, developmental problems linked to cancer could harm the socially constructed image of TCPs. Atypical behaviors, in turn, could further undermine relations with peers, and in consequence, intensify feelings of isolation and hinder recovery and social readaptation (Kreitler, 2019; Wiener et al., 2016).

Cancer marks and excludes, functioning as a social stigma (Donovan, 2001; Johnson et al., 2014). Being assigned to a group of cancer patients leads observers to overestimate the traits schematically associated with stigma (e.g., sudden changes in physical appearance caused by the treatment) and at the same time to omit non-prototypical and less distinct characteristics (e.g., related to cognitive functioning, cf. Berrenberg et al., 2007; Dunn, 2015; Martinez et al., 2016). The discrediting attribute triggers a series of conscious (explicit, controlled) vs. unconscious (implicit, automatic) cognitive, affective, and behavioral reactions (Devine & Sharp, 2009), defining observers' attitudes towards cancer patients (Liang et al., 2019; Martinez et al., 2016; Sriram et al., 2015).

Stereotypical beliefs about TCPs, for example, their weakness, can induce negative feelings, e.g., anxiety or discomfort. In contrast, positively prejudiced observers may feel compassion and sympathy, expecting more reflection, responsibility, etc. from TCPs due to their unusual life experiences (Drury et al., 2005; Threader & McCormack, 2016).

Moreover, a variety of feelings, triggered (un)consciously by associations with cancer, operate as an affective "filter", influencing subsequent data processing. Affect can reduce importance of data inconsistent with initial emotional response, for example, when observer reduces the diagnostic value of information which

opposes the TCP stereotype (Martinez et al., 2016; Simon et al., 2011; Wiens & Gilbert, 2000).

Stereotypes and prejudice are much more often aroused and used in an automatic rather than controlled way (Devine & Sharp, 2009). Unlike explicit stereotypes and prejudice, for example, openly expressed racist opinions, people are often unaware of the content of their own cognitive and affective reactions or cannot identify their actual source. Research on the mere ownership (Beggan, 1992) or mere exposure effect (Zajonc, 1980) proved this tendency.

In contrast to implicit attitudes, people can generate explicit attitudes in which cognitive, affective, and behavioral elements are consciously controlled. One possible reason is their egalitarian values, which when undermined give rise to shame or cognitive dissonance. Another reason is social pressure regulating interpersonal behavior (Bosson et al., 2000; Hofmann et al., 2005). Therefore, negative attitudes, assessed by traditional paper-and-pencil measures, correlate little with implicit attitudes, controlled by more sensitive methods. Hence, research on stereotypes and prejudice against TCP should be conducted bidirectionally, analyzing and comparing explicit and implicit attitudes, unmasked by political correctness.

The studies presented in this paper had the following objectives: (1) provide a formal and content characteristic of the TCP explicit stereotype created by healthy peers, (2) quantify explicit and implicit prejudice against the TCP, and (3) compare them in terms of direction and power.

## **STUDY 1: STRUCTURE AND CONTENT OF THE TCP EXPLICIT STEREOTYPE**

### **Method**

#### ***Participants and Procedure***

The first cross-sectional study was conducted in 84 secondary schools located in the Małopolska province—a well-industrialized region of southern Poland. The researchers sent an official letter to the principals of randomly selected schools, asking for permission to conduct a short survey concerning “the image of teenage cancer patients as created by healthy classmates”. After obtaining approval, students were organized under a convenience-voluntary sampling scheme (Gravetter & Forzano, 2016) in the school.

The aims, procedures and materials used in Study 1 and 2 were approved by the Ethics Committee for Research at the home university of the researchers (BS-703/P/2019).

### *Measures*

**Demographic Data.** The Stereotype of Teenage Cancer Patients Questionnaire (STCPQ), a tool developed by the authors of this paper (Appendix 1), consists of three parts. The first one contains questions about the respondent—their gender, age, and personal experiences with cancer.

**Explicit Stereotype of the TCP.** In the second part of the STCPQ the respondents were asked to imagine a typical teenager (male or female) with cancer, and then provide ten attributes to describe him or her. Next, the participants assessed how negative or positive these attributes were on a scale from  $-3$  to  $3$  ( $-3$  meaning extremely negative) and estimated the TCP percentage with proposed features (Dovidio et al., 1996; Esses et al., 1993).

In the third part of the STCPQ, 50 adjectives divided equally into cognitive (e.g., intelligent), task-oriented (hardworking), social (sociable), emotional (optimistic), and physical appearance/somatic (bald) domains of human functioning were rated on a 0–6 scale (where 0 meant no specific feature and 6 extreme in severity).

The first four domains were identified based on the assumptions of the Stereotype Content Model (Fiske, 2018), which assumes two basic categories of social perception content: warmth and competence. Warmth groups characteristics of social and emotional functioning (e.g., fairness) which bring satisfaction to interpersonal relations. Competence represents features of cognitive and task-oriented functioning (competent) that are important for the effectiveness of one's actions.

Physical appearance/somatic domain was considered because cancer can be associated with negative side effects of medical procedures used during treatment, e.g., hair loss.

The attributes were sourced from the Gough-Heilbrun Adjective Check List. Three judges assessed whether a specific feature was representative for the TCP stereotype (Krippendorff's  $\alpha = .848$  for the compatibility of assessments). Subsequently, the characteristics were assigned to the five domains of human functioning (Krippendorff's  $\alpha = .720$ ). Eventually, unanimously assigned features were introduced to the tool. Considering a limit of 10 attributes for each of the domains specified, in total 50 characteristics for the third part of the STCPQ, the authors took into account two criteria: (1) the third part of the tool should not be too long in order not to discourage participants from taking the survey, and (2) the number of items

for the domains and the total should be sufficient to obtain satisfactory Cronbach's alpha values, indicating high consistency of the third part of the tool.

For physical appearance, four attributes were identified (healthy, weak, delicate, attractive) based on the ACL and judges' assessments. Six were derived from papers on the stereotype of cancer patients (Drury et al., 2005; Dunn, 2015; Simon et al., 2011). For the entire tool Cronbach's alpha was .905 and .784, .794, .780, .887, .798 for the covered domains. The judges were two psychologists who have worked at their home university for several years, and an experienced psycho-oncologist.

### *Data Analyses*

The structure and content of the TCP explicit stereotype were quantified in two steps. First, a content analysis of the open-ended descriptions proposed in the second part of the STCPQ was performed. Their importance was established by calculating a weighted average for each attribute according to the formula:  $\sum(\text{number of specific attributes} \times \text{their position in the list from 1 to 10 with a weight of 10 for the first position}) / 10$  possible positions in the list (Dovidio et al., 1996; Esses et al., 1993;).

Second, a series of exploratory factor analyses (principal component analysis, varimax rotation with Kaiser normalization) were conducted on data from the third part of the STCPQ. All statistics in Study 1 were calculated using IBM SPSS 26 and JASP 0.11.1.

### **Results**

The basic characteristics of Study 1 participants are shown in Table 1.

**Table 1***Basic Sociodemographic and Background Variables for Participants in Study 1 and Study 2*

Characteristic	No. (%)	<i>M (SD)</i>
<b>Study 1</b>		
Gender:		
female	1,393 (58.7)	
male	997 (41.2)	
Age		17.416 (.921)
Declared experiences with cancer in the past:		
personal	57 (2.4)	
someone close	1,130 (47.7)	
Declared number of relatives with cancer experiences in the past		1.624 (1.167)
<b>Study 2</b>		
Gender:		
female	204 (98.5)	
male	3 (1.5)	
Age		21.751 (4.004)
Declared experiences with cancer in the past:		
personal	3 (1.4)	
someone close	157 (75.8)	
Declared number of relatives with cancer experiences in the past		2.061 (1.751)

### *The Content Analysis for Open-Ended Descriptions*

In total, students proposed 11,191 attributes for their peers with cancer. Table 2 presents 20 features whose weighted average exceeded 100.

**Table 2***Image of TCP: Content Analysis of Open-Ended Descriptions*

Position	Characteristic	Weighted average value
1	Sad	658.2
2	Weak	348.5
3	Bald	347.1
4	Pale	329.1
5	Sensitive	226.0
6	Quiet	200.0
7	Optimistic	163.5
8	Skinny	159.6
9	Persistent	159.0
10	Reasonable	158.3
11	Withdrawn	151.8
12	Brave	147.7
13	Distraught	143.0
14	Silent	129.8
15	Bad	125.0
16	Mature	124.3
17	Amiable	122.1
18	Alone	119.9
19	Joyful	116.7
20	Calm	100.0

Students focused mainly on the qualities of emotional (45%), social (30%) and physical appearance/somatic functioning (20%) of TCP. In contrast, they marginalized the task-oriented (5%) and totally omitted the cognitive functioning characteristics. Most attributes were negative (55%) and the least favorable was physical appearance/somatic (100% of traits), followed by social (66%) and emotional functioning (33%). In sum, the TCP stereotype was three-dimensional and rather negative.

### *Exploratory Factor Analysis for Adjective Scales*

To test the assumed five-domain model of TCP functioning, exploratory factor analysis was initiated with a five-factor solution. Unfortunately, the distinguished factors were not interpretable—each of them was a conglomerate of traits representing various domains of human functioning. This solution explained 44% of variance

of the TCP image, with eigenvalues ranging from 11.164 to 1.342 (KMO test = .941 and Bartlett's  $\chi^2(1225) = 32450.767$ ;  $p < .01$ ).

Therefore, additional analyses were conducted, reducing the number of factors and verifying the reasonableness of the obtained solutions. Finally, a two-factor solution was accepted, which explained 34% of variance of the TCP image. Obtained findings are presented in Table 3, omitting adjectives with loading factors below .60.

**Table 3**

*Image of TCP: Result of Exploratory Factor Analysis for Adjective Scales*

Characteristic	Factor	
	I	II
Ambitious	.713	
Gifted	.678	
Kind	.669	
Broad-minded	.666	
Persistent	.648	
Responsible	.644	
Wise	.640	
Cooperative	.637	
Intelligent	.627	
Well-organised	.623	
Emotional	.622	
Brave	.613	
Truthful	.612	
Bright/Smart	.598	
Dark circles under the eyes		.706
With scars		.672
Weak		.654
Skinny		.643
Pale		.634
Swollen		.632
Bald		.600
Eigenvalues	11.164	5.485
Variance explained	22%	12%

The first, still uninterpretable factor,<sup>1</sup> explained 22% of variance and linked the characteristics of emotional, social, task-oriented and cognitive functioning. In contrast, the second factor, explaining 12% of variance, grouped only unfavorable attributes of physical appearance.

These results suggest a one-dimensional TCP stereotype. Considering the imposed characteristics, the participants focused primarily on physical appearance, emphasizing the importance of visible, external symptoms of cancer. The remaining characteristics, correlating with the first factor, were a non-specific background for the second factor's attributes.

## **STUDY 2: EXPLICIT AND IMPLICIT PREJUDICE AGAINST TCP**

### **Method**

#### ***Participants and Procedure***

The second cross-sectional study included 207 undergraduate students of pedagogy at the home university of the researchers. Participants were organized under a convenience-voluntary sampling scheme (Gravetter & Forzano, 2016).

The study was conducted individually in a laboratory where participants completed the Implicit Association Test (IAT). They were told that the study concerned "people's decision-making processes, namely the speed of assigning different words to narrow/wide and positive/negative categories", informed about their rights, and asked to submit written consent to participate in the experiment. After the IAT, respondents were asked to complete the STCPQ.

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<sup>1</sup> According to an alternative interpretation proposed by one of the Reviewers, the first factor may represent a compensatory function in contrast to the negatively perceived physicality of the TCP. However, the top-of-mind index, analyzed by the first part of the STCPQ, argues against such a proposition. It is worth noting that the image reconstructed in this way was three-dimensional, and the traits of social and emotional functioning were mostly negative, in contrast to the traits correlated with the first factor in the EFA ( $r > 0.60$ ), all positive (cf. Table 1). The alternative interpretation, however, is worthy of note and verification in subsequent investigations.

## *Measures*

**Demographic data.** Personal information about gender, age, and respondents' experiences with cancer were collected using the first part of STCPQ.

**Explicit prejudice against TCP.** Explicit prejudice against a TCP was quantified based on the weighted ratings of the open-ended descriptions proposed in the second part of the STCPQ.

**Implicit prejudice against TCP.** The IAT was used to measure implicit prejudice against a TCP. This measure assumes (Greenwald et al., 1998) that people with a negative attitude towards a specific object should categorize the presented words faster, linking them to the object when it co-occurs with a negative but not a positive term. The opposite effect should occur for a positive attitude. The difference in response times in compatible vs. incompatible complex classification tasks is an index of implicit prejudice (d-score). A negative/positive d-score indicates positive/negative bias and its value represents the size of explicit prejudice.

The IAT used in Study 2 compared prejudice against TCP vs. teenagers treated as a reference category. In the compatible complex classification task, participants assessed whether the presented words fit into the category: "teenagers or pleasant" (left) vs. "teenagers with cancer or unpleasant" (top right corner of the computer screen). Eighty words were projected randomly in the middle of the computer screen.

Terms specific to the "teenagers with cancer" category (ten positive and ten negative words) were derived from the results of Study 1, that is, the highest weighted averages of content analysis and factor loadings in exploratory factor analysis (Appendix 2). Terms specific to the "teenagers" category (ten positive and ten negative words) were identified in studies (Dusek et al., 1981; Gross & Hardin, 2007; Holmbeck & Hill, 1988; Romer et al., 2017) on stereotypical beliefs about adolescents (Appendix 2). Terms specific to the "pleasant" (twenty words) and "unpleasant" (twenty words) categories came from Greenwald et al.'s study (Greenwald et al., 1998) testing the usefulness of the IAT (Appendix 2).

In the incompatible complex classification task, eighty words were displayed again randomly. However, this time they were assigned to the category: "teenagers with cancer or pleasant" (left) vs. "teenagers or unpleasant" (top right corner of the screen).

## *Data Analyses*

The weighted ratings of the open-ended descriptions proposed in the second part of the STCPQ were calculated according to the formula: (rating of the attribute  $\times$  the percentage of TCP with this attribute  $\times$  their position on the list)/10.

In other words, to consider the power of association of the proposed attribute with the term “cancer”, ratings were multiplied by the percentage of TCP with this attribute, and the products were given a weight from 1 to 10 (where 10 was the first attribute on the list). It was assumed that an attribute assigned to 100% of the observed group members is more strongly associated with its representatives than an attribute specific to only 10%, and the characteristic indicated as the first one (sad) is more strongly associated with the assessed category than “reasonable” in the tenth position. Moreover, it can be assumed that a respondent proposing only two features is less biased against a specific object than a person giving 10 attributes. Therefore, the sum of the weighted products was divided by the constant 10 (Dovidio et al., 1996; Esses et al., 1993).

The significance of the IAT effect (d-score) was established using the result of paired samples *t* test and Cohen-d value with CI 95%. All statistics in Study 2 were calculated using IBM SPSS 26 and JASP 0.11.1.

## **Results**

The basic characteristics of Study 2 participants are shown in Table 1.

### ***Explicit Prejudice Against TCPs***

The weighted ratings of the open-ended descriptions ranged from -1260 to 1140, with an average of -155.482 (*SD* = 425.513; skewness = .145; kurtosis = .187). It was also checked to what extent explicit prejudice correlated with the five domains of TCP functioning, assessed in the third part of the STCPQ. All relations were significant and positive. The obtained values for the cognitive, task-oriented, emotional, social, and somatic/physical appearance domains were: .131, .183, .332, .320 and .351, respectively.

### ***Implicit Prejudice Against TCPs***

Before calculating the IAT effect, extreme reactions with times below 100 ms and above 10,000 ms were excluded from the analysis. The first result may represent accidental/habitual responses, while the second one – delayed responses caused by different distractors. Therefore, 132 responses were eliminated from the database.

Reaction time in the compatible, compared to incompatible complex classification task, was significantly shorter ( $M = 1167.162$  ms;  $SD = 293.438$  ms vs.

$M = 1282.830$  ms;  $SD = 345.770$  ms),  $t(206) = 5.962$ ;  $p < .01$ ;  $r = .635$ ; Cohen's  $d = .417$ ; CI 95%: .274; .560.

The D score recommended by Greenwald et al. (2003) was also calculated and equaled: 0.356,  $t(206) = 5.974$ ;  $p < .01$ ; Cohen's  $d = .417$ ; CI 95%: .275; .561.

The results of IAT, calculated using the “classical” as well as the D scoring algorithms, revealed that participants were more negatively biased against TCP than teenagers, and the power of the implicit prejudice was moderate.

### ***Explicit and Implicit Prejudice Against TCPs: A Comparison***

To compare the power of explicit and implicit prejudice against TCPs, raw results expressed in various units (points vs. milliseconds) on scales of different lengths were transformed into standardized results. It was found that neither type of prejudice differed in power ( $M = -.048$ ;  $SD = 1.186$  vs.  $M = .052$ ;  $SD = .759$ , respectively),  $t(188) = 1.036$ ;  $p$  ns., and they were not correlated ( $r = .120$ ;  $p = .10$ ).

## **DISCUSSION**

The aims of this study were: (1) assess the formal and content characteristic of explicit TCP stereotype, (2) assess explicit and implicit prejudices against TCP, and (3) compare the power and sign of both dimensions of prejudice.

First, depending on the data collection method and analysis, subjects generated a three- or one-dimensional image. Considering the first associations related to TCP, they were portrayed using attributes of social, emotional, and physical appearance domain of functioning. In contrast, the image based on exploratory factor analysis was one-dimensional and for the interpretable factor concerned physical appearance characteristics—cancer side effects.

Compared to other reports (Berrenberg et al., 2007; Drury et al., 2005; Martinez et al., 2016; Stern & Arenson, 1989), the cognitive and task-oriented attributes of TCPs were “ignored”. For healthy peers, the hospital is a place where intellectual competence and performance are the exclusive domain of medical personnel and not cancer patients, who are assessed as weak, sad, and distant (Berrenberg et al., 2007; Martinez et al., 2016; Simon et al., 2011; Wiens & Gilbert, 2000).

Furthermore, the TCPs were physically ailing, marked by illness, and experiencing social-emotional conflicts in connection with the disease. The battle against cancer can be a source of ambivalent experiences, e.g., sadness vs. joy resulting from declining vs. improving health, respectively (Simon et al., 2011), and the

hospital rigor can intensify escapist tendencies, e.g., alienation (Johnson et al., 2014; Chambers et al., 2012). The same circumstances may drive the development of positive personal characteristics in cancer patients, e.g., maturity (Threader & McCormack, 2016).

Unfortunately, there are no studies that analyze explicit vs. implicit stereotype and prejudice of healthy adolescents against peers with cancer. Therefore, it is difficult to assess the extent to which the results obtained in Studies 1 and 2 were accidental or reflected population effects. Nevertheless, there is a well-known study on explicit vs. implicit attitudes towards mentally ill patients analyzed among medical students and mental health professionals. Comparing the findings-based survey with the results of the Go/No-Go Association Task, Kopera et al. (2015) found that both groups held ambivalent attitudes toward mentally ill patients. Although professionals presented a weaker tendency to discriminate due to greater identification with higher emotions than non-professionals, both groups revealed negative implicit attitudes toward mentally ill patients. Furthermore, others (Martinez et al., 2016; Stern & Arenson, 1989; Wiens & Gilbert, 2000) show that the stereotype of a cancer patient is rather negative.

In contrast, Drury et al. (2005) demonstrated that the stereotype of children under chemotherapy is not significantly more negative than the socially shared view of a healthy ones. Lower ratings were given only for external appearance and emotions but not for cognitive, task-oriented, and social features. Moreover, five-dimensional images were presented (sociability, degree of liking, future adjustment, physical potency, and judgements of the child—Drury et al., 2005; Simon et al., 2011) or, respectively, three-dimensional ones (unfavorable physical appearance, low emotional and task-oriented functioning).

The discussed differences in solutions could be explained by cultural differences (Polish vs. American research context), using (non)standardized tools (Ratings of the Child Questionnaire, cf. Drury et al., 2005; or unstructured interview, cf. Simon et al., 2011 vs. the STCPQ), and methods of data analysis (qualitative data analysis, content and exploratory factor analysis).

Second, it was found that explicit prejudice against TCP was negative and as it decreased, the ratings of the whole range of TCP traits deteriorated. Third implicit prejudice also had a negative sign, but it was not linked with explicit prejudice.

Based on the IAT procedure, several studies (Schiller et al., 2013; Sriram et al., 2015) revealed that implicit attitudes of patients, medical staff, and general public towards individuals with oncological diseases are negative, with lung cancer being a source of stronger bias than breast cancer. Furthermore, implicit bias was positively related to explicit prejudice against cancer. A more recent paper (Liang et al.,

2019) showed that cervical cancer was a source of automatically induced negative stereotype and prejudice among medical staff.

Summarizing, the above-mentioned and other papers focused on stigma of oncological disease (Fujisawa & Hagiwara, 2015; Johnson et al., 2014), permit the assumption that the effects of the “cancer” label, in the form of a reduced negative image and aversive affect was not incidental.

Finally, in discussing the results of Studies 1 and 2 it should be emphasized that both dimensions of prejudice were not linked—they are two separate constructs, which should not be treated as substitutes. Referring to only one in investigations while omitting the other and making predictions about emotions or interpersonal behavior on such a basis may be unjustified (Hofmann et al., 2005). If that is the case, emotions and interpersonal behavior derived from explicit and implicit prejudice could have different content, course, and consequences.

## LIMITATIONS

1. It cannot be excluded that the IAT used to quantify implicit adolescents’ prejudice and developed based on the data gathered among high school students may be an unjustified arrangement. Participants in Study 1 were on average two years younger than those in Study 2. Greater life experience, resulting from more frequent contact with patients and specific educational content in the social sciences, received during one/two years of university study could influence their stereotype and prejudice against TCP.

One should also be aware of potential shortcomings of the IAT, for example, a large variance of latencies which may hamper the reliability of the “classical” IAT score (cf. Cunningham et al., 2001). The authors tried to minimize this problem twofold: by eliminating extreme latencies, i.e., less than 100 ms and more than 10,000 ms, and by calculating the more stable D score recommended by Greenwald et al. (2003). On the other hand, Nosek and Smyth (2004) provide strong evidence for the convergent and discriminative validity of the IAT.

2. The power and sign of attitudes may be influenced by gender. In Study 1, a similar number of girls and boys were included, while Study 2 involved mainly women. Research indicates (Christov-Moore et al., 2014) that females are more empathic than males, hence their attitudes towards cancer patients may have been more positive.

The above-mentioned limitations may have been due to the convenience rather than random sampling scheme in both studies. It cannot be excluded that respondents

whose relatives had had experience with oncological diseases were more likely to participate in the studies. Because of their familiarity with this topic and identification with the group, the reconstructed image may have been more favorable or, in contrast, more negative because of the difficult emotions associated with their relatives' illness. Thus, analogous effects may have occurred for contextual variables concerning other personal experience with cancer. These factors were controlled in both studies, but due to limited space, their impact was not discussed here. Therefore, in subsequent papers, the issue of potential moderators of stereotyping and prejudice against TCP should be the central focus.

3. Both studies analyzed attitudes without cancer specification, even though observers, in general, present more positive biased against patients with oncological disease caused by factors independent of their lifestyle (e.g., breast cancer) compared to their irresponsible behavior (lung/skin cancer) (Fujisawa & Hagiwara, 2015; Marlow et al., 2015). Similarly, the TCP image reconstructed in Studies 1 and 2 may have been contaminated by the teenager stereotype as such, which tends to be rather negative in the public perception (Dusek et al., 1981; Gross & Hardin, 2007; Holmbeck & Hill, 1988; Romer et al., 2017; Santrock, 2013).

However, it is difficult to analyze the attribute (cancer) in isolation from the carrier (teenager), especially when both studies were aimed at assessing attitudes toward teenagers with cancer, not cancer or teenagers. Furthermore, the TCP image was constructed by peers, thus positive bias caused by the valorization effect of self-esteem cannot be excluded. The teenager with cancer—a subcategory of teenagers—was evaluated, hence as a result of identifying with or at least belonging to the group (cf. minimal group effect), respondents may have perceived the members more positively than adults or adults with cancer, treated as an out-group.

4. Some doubts may concern the EFA result in Study 1. The first found factor was unclear (see also footnote 1 on alternative interpretation) because it included features of all domains except physical appearance/somatic functioning. It cannot be ruled out that after taking into account the attribution factor, considered as a potential moderator of group schema formation, this image would be more unambiguous.

As Kurtek (2016, see also Wojciszke, 1986, 1991) convincingly argues, in this perspective, cognitive schemas, operating as functional-structural filters, organize not only social perceptions but also behaviors towards others (cf. differences in evaluations of lung cancer patients vs. other cancer patients, Fujisawa & Hagiwara, 2015; Marlow et al., 2015). This issue requires further research considering cognitive-affective and motivational mediators and moderators of the formation, maintenance, modification, and application of group schemas in contact with their members (Kurtek, 2016; Kolańczyk & Wojciszke, 2010; Kolańczyk et al., 2004).

Finally, in Study 2, the order of administered tools (STCPQ completed after the IAT) could have modified (e.g., improved) the general social image of TCP. The authors chose the lesser of two evils, knowing that the reverse order could have affected the results even more due to a strong priming effect. The STCPQ was completed several hours after the IAT, which may have significantly reduced priming among the participants.

## RECOMMENDATIONS AND APPLICATIONS

In both discussed studies, explicit and implicit attitudes toward TCP were simplistic and negatively colored, though their power was quite moderate. However, Rosenthal (1991) argues that even relatively weak effect size as  $r = .2$  should be considered a serious cause for a negative change in the quality of life of approx. 20% of individuals affected by a specific harmful factor.

Therefore, for the effects found in Studies 1 and 2, it is worth recommending special procedures intended to overcome stereotyping and prejudice against TCP, and, consequently, their discrimination, stigmatisation, and self-stigmatisation (Maitner et al., 2016; Whitley and Kite, 2010). These procedures should contribute to transforming the negative sign of explicit and implicit attitudes of healthy peers, teachers and parents into a positive one in the course of the following actions (Daher, 2012; Kreitler, 2019; Wiener et al., 2016): promoting knowledge about (1) cancer and its specificity, depending on the patient's age and type of oncological disorders, (2) communication with a TCP and his/her relatives, (3) patient's needs and his/her functioning during and after treatment, (4) readaptation at school after treatment, (5) providing support at school, and (6) coping with loss in the event of the death of a loved one.

As mentioned in the Limitations section, in Studies 1 and 2, the potential moderators of explicit and implicit attitudes towards TCP were not examined. It cannot be excluded that some, e.g., gender or personal experience with cancer, may amplify or reduce the obtained effects. In the first case, the actions recommended in points 1–6 seem even more advisable. In the second, negative effects may be nullified, suggesting an indifferent attitude of the participants towards TCP. In practice, this means more or less conscious neglect of TCP by their classmates both in the phase of illness and remission, and after returning to school (reaction: “You were ill... sorry, but I didn't notice”).

In this case, what can be recommended are special procedures concerning (Daher, 2012; Kreitler, 2019; Wiener et al., 2016): (1) actual functioning of teenagers

with cancer, (2) eliminating stereotypical beliefs reducing their image only to negative features of psychical and emotional functioning, and instead (3) promoting a multidimensional image, nuanced and varying with the stages of oncological disorders.

Third, these revealed attitudes can be a source of controlled and uncontrolled interpersonal behaviour. In both cases, they can be harmful; for example, a healthy adolescent consciously avoids contact with a sick peer, or without knowing the source of motivation he or she withdraws from a relationship with that person. Such behaviour can be reduced by training observers to be reflective, distant from their interpersonal attitudes. The following questions serve this purpose (Daher, 2012; Kreitler, 2019; Wiener et al., 2016): (1) What situation is my sick classmate in?, What might he or she feel, think, need? (2) With whom can I talk about my doubts concerning my classmate's disease? (3) What made my classmate sick? Is he or she responsible for the condition they are in or not? and (4) How can I help my sick classmate? etc.

For many years, anti-discrimination programmes have been successfully implemented, benefitting members of minority racial, gender, age, etc. groups. The effectiveness of actions aimed at limiting the phenomenon of false hypotheses confirmation, whose source is prejudice against different groups of students, calculated in the last meta-analysis was Hedges'  $g$  from .30 to .38. This means that the participation of teachers in such interventions improves the situation approx. 65% of students compared to their peers whose teachers did not participate in such programmes (de Boer et al., 2018). It cannot be ruled out that special interventions concerning TCPs may have similar effectiveness.

### **CRedit Author Statement**

ŚŁAWOMIR TRUSZ (50%): conceptualization, methodology, preparing original draft.

HANNA STĘPNIEWSKA-GĘBIK (50%): conceptualization, investigation, preparing original draft.

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