



Public and Non-Public Prosocial Behaviors: Differential Associations with Empathy and Aggression

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Abstract

The associations between prosocial behavior, empathy and aggression have been studied many times. Most of these studies address prosocial behavior as a unitary construct, yet recent studies suggest that the construct is not homogeneous. These studies show that there are different types of prosocial behavior. In the present study a distinction is made between public (i.e. in front of others) and non-public prosocial behaviors. These two types show different associations to other constructs (i.e. empathy and aggression). Therefore, the aim of this study was to find the differential associations between public and non-public prosocial behaviors, empathy and aggression. It was hypothesized that non-public prosocial behaviors were positively associated with empathy, and negatively associated with aggression. This was not expected for public prosocial behavior. One hundred sixty-nine Dutch young adults ($M = 22.25$, $SD = 2.25$) completed self-reported measures on these constructs. In a multiple regression analysis, in which was controlled for age and gender, the expected positive association between non-public prosocial behaviors and empathy and the expected positive association between public prosocial behavior and aggression were found. However, non-public prosocial behaviors were not negatively associated with aggression and public prosocial behavior was not negatively associated with empathy. Limitations and implications for future research are provided.

Keywords: prosocial behavior, empathy, aggression, non-public prosocial behaviors, public prosocial behavior

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Humans have the remarkable capacity to behave prosocially towards other individuals, regardless of any existing relationship and with the sole purpose to benefit those who are in need (Lockwood, Seara-Cardoso, & Viding, 2014). Prosocial behavior is defined as voluntary behavior intended to help or benefit another (Padilla-Walker & Fraser, 2014). A motivational factor for this type of behavior is empathy (Carlo & Randall, 2002). Through socialization people are taught the importance of empathy as well as prosocial behavior, and society encourages the engagement in these kinds of behaviors.

Aggressive behavior is generally found to be negatively associated with prosocial behavior (Eron & Huesmann, 1984; Kokko, Tremblay, Lacourse, Nagin, & Vitaro, 2006; Shiner & Caspi, 2003). Nevertheless, people can engage in both highly aggressive and highly prosocial behavior at the same time (McGinley & Carlo, 2006; Piehler & Dishion, 2007; Pulkkinen & Tremblay, 1992). When enacted in public, prosocial behavior has actually been found to be positively associated with aggression (Carlo & Randall, 2002). Therefore a distinction can be made between public (i.e. conducted in front of an audience) and non-public prosocial behaviors (i.e. altruistic, compliant, emotional, direct and anonymous prosocial behavior). A positive correlation was found between public prosocial behavior and aggression and a negative correlation between public prosocial behavior and empathy (Carlo, Hausmann, Christiansen, & Randall, 2003).

The definition of prosocial behavior seems to be paradoxical with the fact that some prosocial behaviors have been found to be positively associated with aggressive behavior. It is conceivable that society is promoting behaviors that are considered to be prosocial, but are in fact aggressive. It could be possible that behavioral interventions which focus on increasing prosocial behavior and decreasing aggressive behavior, encourage prosocial behavior that is actually driven by selfish or harmful intent. This may result in increased aggressive behavior, the opposite of what was intended. Consequently, it is imperative to obtain further understanding of what motivates prosocial behavior.

Empathy as a positive predictor of prosocial behavior

Empathy can be defined as an emotional reaction elicited by and congruent with another's emotional state or condition (Eisenberg et al., 2002; Hoffman, 2008; Lockwood et al., 2014). Helping and caring behaviors arising from this identification are labelled empathy-based behaviors and can be described as prosocial behavior. Many studies indicate that there is a strong positive association between empathy and prosocial behavior (Andreoni & Rao, 2011; Batson & Ahmad, 2001; Bierhoff & Rohmann, 2004;

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Carlo & Randall, 2002; Lockwood et al., 2014; Paciello, Fida, Cerniglia, Tramontano, & Cole, 2012; Pavey, Greitemeyer, & Sparks, 2012; Stocks, Lishner, & Dekker, 2009; Sze, Gyurak, Goodkind, & Levenson, 2012; Van Lange, 2008) and that empathy is negatively associated with antisocial behaviors (Batson, Chang, Orr, & Rowland, 2002; Edele, Dziobek, & Keller, 2013; Thompson & Gullone, 2008). Higher levels of compassion and concern for people in need, facilitates more prosocial moral reasoning, and leads to the desire to improve the condition of other people (Hauser, Preston, & Stansfield, 2014; Oceja et al., 2014; Paciello et al., 2012). Study findings also provide evidence that the readiness of individuals to help others is driven by sympathy (FeldmanHall, Dalgleish, Evans, & Mobbs, 2015; Pavey et al., 2012). Sympathy is the concern for another based on the perception and understanding of their emotional state, which will lead to an immediate emotional response (Batson, 1991; Carlo & Randall, 2002; Padilla-Walker & Fraser, 2014; Stocks et al., 2009; Van Lange, 2008). Sympathy not only motivates readiness to help others, it increases generosity as well (Bekkers, 2006). One important cognitive variable related to sympathy is perspective taking, which refers to the attempt to understand someone's thoughts and feelings, and thus motivates oneself to behave prosocially (Oswald, 2002). Accordingly, this would suggest that people who behave prosocially should show high levels of sympathy and perspective taking, both indicators of empathy (Carlo & Randall, 2002; Eisenberg et al., 2002; Hoffman, 2008; Oswald, 2002; Wilhelm & Bekkers, 2010).

Aggression as a negative predictor of prosocial behavior

Aggressive behavior is any kind of behavior that is used to intentionally hurt another person, while that person does not want to be hurt (Baron & Richardson, 1994). Aggressive behavior can take various forms; it can be overt or direct when it is more physical. However, it can also be more covert and indirect when aggression takes a relational form. Aggression can cause physical, emotional or psychological distress (Archer, 2002; Belgrave, 2009; Holt et al., 2012).

It has been assumed that prosocial behavior is negatively associated with aggression. Previous evidence showed that prosocial behavior arises from selfless intentions and behaviors (Batson, Ahmad, & Tsang, 2002; Eisenberg, 2003). Adolescents who display prosocial behavior will generally not display aggressive behavior, and vice-versa (Belgrave, 2009; McDonald et al., 2011). Accordingly, aggressive and prosocial behavioral profiles have been presumed to be mutually exclusive and counter to each other (Eron & Huesmann, 1984; McDonald, Wang, Menzer, Rubin, & Booth-LaForce, 2011). Thus, it seems that the intentions that underlie prosocial behavior and aggressive behaviors are incompatible according to their definitions. Hence, it can be assumed that prosocial behavior and aggression are negatively associated.

Different types of prosocial behaviors

As mentioned above, prosocial behavior is generally defined as behavior that is intended to benefit other people. However, people can offer assistance to others for many different reasons, but these reasons do not always involve the well-being of the receiver (Dovidio, Piliavin, Schroeder, & Penner, 2006). Recent research has questioned the negative association between prosocial behavior and aggression. It has been suggested that certain forms of prosocial behavior might operate from motivations similar to those underlying aggression and that prosocial behavior in certain situations can have negative implications for the recipients (Boxer, Tisak, & Goldstein, 2004; Carlo & Randall, 2002). When shifting focus from the form of behavior to the function of behavior, it can be stated that aggression and prosocial behavior can serve the same purpose in order to become socially successful. A person can use both, prosocial and aggressive strategies to achieve resource control (Hawley, 2007; Hawley, Little, & Card, 2007). Ethologists underscore the importance of competition for material resources and dominance hierarchy in groups, as it underlies all human relations. Therefore resources can be acquired either by bullying or prosocial behavior (Hawley, 1999). Bistrategic resource control (i.e. implementing both prosocial and coercive strategies simultaneously) should gain social dominance. Prosocial behavior will be used either as a way to cooperate with others, or by being superficially kind towards others to benefit the self. Coercive methods are needed to gain social dominance (Hawley, 2003).

This evidence for different motives for the implementation of prosocial behavior suggests that there is a possibility of a positive correlation between certain types of prosocial behavior and aggression. In the present study a distinction is made between public and non-public prosocial behaviors. This distinction is based on the analysis of the results of previous published studies (Carlo et al., 2003; Carlo & Randall, 2002; McGinley & Carlo, 2006). Public prosocial behavior had correlations with empathy, dissimilar to the correlations between empathy and other types of prosocial behavior (i.e. non-public prosocial behaviors). Prosocial behavior conducted in front of an audience (i.e. public prosocial behavior) is likely to be motivated, or partly motivated, by the desire to gain respect or approval of the audience (Carlo & Randall, 2002; Schroeder, Penner, Dovidio, & Piliavin, 1995). Thus, public prosocial behavior may be more motivated by extrinsic social rewards (White, 2014). When someone is helped in public, the helper can do this out of self-interest and the strategy of overhelping can be applied. Overhelping occurs when someone tries to spoil the impression of an observer, by specifically helping another person (i.e. the performer) to achieve his goals. The observer might attribute the success of the performer to the help (Gilbert & Silvera, 1996). Therefore it seems that when prosocial behavior is public, it can be positively associated to aggression.

Most research on empathy and prosocial behavior does not necessarily distinguish between public and non-public prosocial behaviors. Nevertheless, some studies did find that people who show more prosocial or helping behavior in public situations tend to be more concerned with their own needs, to use less sophisticated forms of perspective taking and reasoning, to be less sympathetic and are more likely to ascribe responsibility to others instead of themselves (Carlo et al., 2003; Carlo & Randall, 2002). Relatedly, a study conducted by McGinley and Carlo (2006) found evidence for the assumption that, because public prosocial behavior is focused on benefiting the self, it should be negatively associated with empathy.

The present study

Recent research suggests that the relationship between prosocial behavior and empathy and aggression may be more complex than previously thought and that prosocial behavior should not be treated as a unitary construct (McGinley & Carlo, 2006). Because of the complexity and the lack of study on prosocial behavior among young adults, it is of importance to conduct more research about the relation between prosocial behaviors and empathy and aggression. Therefore the main objective of the present study is to further explore the differential associations of the two types of prosocial behavior with empathy and aggression. It is hypothesized that non-public prosocial behaviors are positively associated with empathy and negatively associated with aggression. It is also hypothesized that public prosocial behavior is negatively associated or unrelated to empathy and positively associated or unrelated to aggression among Dutch young adults.

Method

Sample

The sample comprised 169 Dutch young adults (40 men and 129 women) with ages ranging from 18 to 26 years ($M = 22.25$, $SD = 2.25$). Among the participants, 70.3% were students (Education level = 5.3% MBO, 26.0% HBO, 0.6% HBO master, 26.0% WO Bachelor, 12.4% WO Master¹), 14.2% had a full-time job and 55.6% had a part-time job. In total, 96.4% of the participants were born in the Netherlands and 94.7% of the participants' parents were born in the Netherlands. All participants were bilingual in Dutch and English.

Procedure

Participants were recruited through the social medium Facebook. To recruit participants, researchers used their own private Facebook network and posted a message including a request to voluntarily participate in the study with a direct link to the online

¹ The Dutch educational level MBO is comparable to vocational education; HBO is comparable to professional education of university of applied sciences; WO is comparable to university.

survey. The benefit of using this recruitment method is that, in a rather easy and cheap manner, a large group of potential participants can be reached. The online survey consisted of a series of questionnaires. Prior to starting the survey, participants were informed that the aim of the study was to investigate associations between attitudes, feelings and behaviors. Participants were assured of the anonymity and confidentiality of their responses. They were informed that researchers would not be able to trace whomever had answered the questions. Participants were informed of their right to end participation whenever they wanted, without having to give any explanation for their actions, and to leave any question unanswered. The participants did not receive monetary compensation for answering the survey. There were no risks involved for the participants.

Measures

Prosocial behavior. For measuring prosocial behavior, the Prosocial Tendencies Measure (PTM; Carlo & Randall, 2002) was used. The PTM is composed of 23 questions divided among 6 subscales. Each subscale assesses a specific type of prosocial behavior. The six types of prosocial behaviors in the PTM include public (4 items, e.g. "I can help others best when people are watching me.", Cronbach's $\alpha = 0.76$), anonymous (5 items, e.g. "I prefer to donate money anonymously.", Cronbach's $\alpha = 0.75$), dire (3 items, e.g. "I tend to help people who hurt themselves badly.", Cronbach's $\alpha = 0.67$), emotional (4 items, e.g. "Emotional situations make me want to help needy others.", Cronbach's $\alpha = 0.74$), compliant (2 items, e.g. "I never hesitate to help others when they ask for it.", Cronbach's $\alpha = 0.80$), and altruism (5 reversed scored items, e.g. I feel that if I help someone, they should help me in the future.", Cronbach's $\alpha = 0.60$). Participants were asked to rate the extent to which the statements described them on a 5-point Likert scale, where 1 = does not describe me at all and 5 = describes me greatly. The subscales anonymous, dire, emotional, compliant and altruism were combined to assess non-public prosocial behaviors (Cronbach's $\alpha = 0.40$). The subscale public was used to assess public prosocial behavior. The questionnaire was found to have convergent validity by conducting a correlational analysis using instruments that were already found to be valid. The questionnaire is internally consistent and shows temporal stability over a two-week period (Carlo et al., 2003).

Empathy. Empathy was assessed by the Dutch version of the Interpersonal Reactivity Index (IRI; Davis, 1983). The IRI measures empathy not as a single unipolar concept, but as a set of constructs (Davis, 1980, 1983, 1996). The IRI is a questionnaire consisting of 28 questions divided equally among four distinct subscales, each of which assesses a specific aspect of empathy. The Perspective Taking (PT) scale measures the tendency to adopt the point of view of other people in everyday life (e.g. "I try to look at everybody's side of a disagreement before I make a decision"). The Fantasy (FS) scale

measures the tendency to imaginatively transpose oneself into fictional situations (e.g. "I really get involved with the feelings of characters in a novel"). The Empathic Concern (EC) scale measures the tendency to experience feelings of warmth, compassion and concern for other people (e.g. "I am often quite touched by things that I see happen"). The Personal Distress (PD) scale measures the tendency to experience distress or discomfort in response to extreme distress in others (e.g. "When I see someone get hurt, I tend to remain calm"). Participants were asked to rate how well each item describes them on a 5-point Likert scale, where 1 = does not describe me well and 5 = describes me very well. The validity of the IRI was checked by investigating the relationship with measures of social functioning, self-esteem, emotionality and sensitivity and with other empathy measures regarding to the four subscales (Davis, 1983). A positive and significant relation was found for three of the four subscales. Only the personal distress scale showed no positive significant relation with unidimensional empathy measures that were developed previously (i.e. The Hogan Empathy Scale and Mehrabian and Epstein Questionnaire Measure of Emotional Empathy) (Davis, 1983; Cliffordson, 2001). Cronbach's Alpha for the IRI is .60.

Aggression. The items used to assess aggression were part of an instrument designed to assess proactive and reactive aggression and victimization (PRA). This instrument was adapted from the Self-Report of Aggression and Social Behavior Measure (SRASBM), which was developed by Morales and Crick (1998) and published in Linder, Crick and Collins (2002). The PRA is composed of 23 questions divided among 8 subscales. Distinctions are made between perpetrators and victims of proactive and reactive forms of physical and relational aggression. Participants were asked to rate the extent to which statements described them on a 7-point Likert scale, where 1 = strongly disagree and 7 = strongly agree. Items that assessed victimization were excluded. In total, 15 items were used (e.g. "I ignore people on purpose to get what I want.", Cronbach's $\alpha = .84$)

Analysis plan

The main objective of the present study is to test if the association between empathy and prosocial behavior, and prosocial behavior and aggression differs for public and non-public prosocial behaviors. It is hypothesized that non-public prosocial behaviors are positively associated with empathy and negatively associated with aggression, whereas these associations are not expected for public prosocial behavior.

Independent-samples t-tests were conducted to test for gender differences for the variables aggression, empathy, non-public prosocial behaviors and public prosocial behavior. To assess the size and direction of the correlation between the study variables, bivariate Pearson's correlation coefficients (r) were calculated. To test the hypotheses, two multiple regression analyses were performed. The dependent variable for the first

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multiple regression analysis was empathy, the predictor variables were public prosocial behavior and non-public prosocial behaviors. The dependent variable for the second multiple regression analysis was aggression, the predictor variables were public prosocial behavior and non-public prosocial behaviors. Age and gender were controlled for in both multiple regression analyses.

Results

Descriptive Statistics

The means and standard deviations for the variables empathy, aggression, non-public prosocial behaviors and public prosocial behavior are presented in Table 1. Differences in the sample size for different variables are due to the use of multiple questionnaires, of which some were not completed by all the participants. Independent-samples t-tests were conducted to test for gender differences for the variables empathy, aggression, non-public prosocial behaviors and public prosocial behavior (see Table 2). Men scored lower than women on empathy, $t(52) = -4.45, p < 0.001$. Gender differences for aggression ($t(49) = 1.35, p = .185$), public prosocial behavior ($t(157) = 1.40, p = .163$) and non-public prosocial behaviors ($t(155) = -1.25, p = .215$) were not significant.

Table 1

Descriptive statistics

Variable	<i>n</i>	<i>M</i>	<i>SD</i>
Empathy	168	3.32	.46
Aggression	168	1.52	.51
Non-public prosocial	157	3.40	.37
Public prosocial	159	1.90	.71

Table 2

Results of Independent-Samples t-tests and Descriptive Statistics

	Men			Women			95% CI for		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	Mean Difference	<i>t</i>	<i>df</i>
Empathy	3.01	.54	40	3.42	.39	128	-.59, -.23	-4.45	52.22
Aggression	1.64	.68	40	1.48	.43	128	-.08, .39	1.35	48.97
Non-public prosocial	3.33	.44	39	3.42	.35	118	-.22, .05	-1.25	155
Public prosocial	2.04	.73	39	1.86	.70	120	-.07, .44	1.40	157

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To assess the size and direction of the relationship between the study variables (i.e. empathy, aggression, non-public prosocial behaviors and public prosocial behavior), bivariate Pearson's correlation coefficients (r) were calculated. The results are presented in Table 3. The correlation between empathy and non-public prosocial behaviors was significant and positive, $r(155) = .260, p = .001$. Aggression was significantly and negatively correlated with non-public prosocial behaviors, $r(155) = -.197, p = .013$. Aggression was significantly and positively correlated with public prosocial behavior, $r(157) = .216, p = .006$. The correlation between non-public prosocial behaviors and public prosocial behavior was negative and significant, $r(155) = -.173, p = .030$. There were no significant correlations between empathy and aggression ($p = .168$) and between empathy and public prosocial behavior ($p = .377$).

Table 3

Pearson Correlations among the Study Variables

	1.	2.	3.
1. Empathy			
2. Aggression	-.11		
3. Non-public prosocial	.26**	-.20*	
4. Public prosocial	-.07	.22**	-.17*

Note: * $p < .05$ ** $p < .01$

Regression Analyses

To test the hypotheses regarding the relation between empathy and the two types of prosocial behavior, a multiple regression analysis was performed. The same analysis was performed to test the hypotheses regarding the association between aggression and the two types of prosocial behavior. Age and gender were controlled for, gender was coded as 1 = man and 2 = woman. The results are presented in Table 4. It was found that non-public prosocial behaviors, public prosocial behavior, age and gender explain a significant amount of the variance in the value of empathy ($F(4,152) = 10.29, p < 0.001, R^2 = .21, \text{adjusted } R^2 = .19$).

The analysis shows that non-public prosocial behaviors were significantly and positively associated with empathy ($\beta = .22, t(152) = 3.03, p = .003$). Individuals who score higher on non-public prosocial behaviors tend to score higher on empathy. Public prosocial behavior was not significantly associated with empathy ($\beta = .01, t(152) = .16, p = .875$). Age was also not significantly associated with empathy ($\beta = -.03, t(152) = -.38, p = .706$). Gender was significantly and positively associated with empathy ($\beta = .39, t(152) = 5.29, p < 0.001$). It can be concluded that women score higher on empathy than men. These findings are consistent with the results of the independent-samples t-tests (see Table 2).

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The analysis shows that public prosocial behavior was the only statistically significant predictor for aggression, there was a positive association ($\beta = .18$, $t(152) = 2.22$, $p = .028$). Individuals who score higher on public prosocial behavior tend to score higher on aggression. Non-public prosocial behaviors were not significantly associated with aggression ($\beta = -.15$, $t(152) = -1.94$, $p = .055$). Neither gender ($\beta = -.12$, $t(152) = -1.58$, $p = .116$), nor age ($\beta = .02$, $t(152) = .25$, $p = .821$) was a significant predictor of aggression.

Table 4

Regression Analyses Predicting Empathy and Aggression (N=157)

	Empathy				Aggression			
	B	SE B	β	95% CI	B	SE B	β	95% CI
Non-public prosocial	.28**	.09	.22	[.10-.45]	-.20	.10	-.15	[-.40-.00]
Public prosocial	.01	.05	.01	[-.09-.10]	.12*	.05	.18	[.01-.22]
Age	-.01	.02	-.03	[-.04-.02]	.00	.02	.02	[-.03-.04]
Gender	.41**	.08	.39	[.26-.57]	-.14	.09	-.12	[-.31-.03]

Note: * $p < .05$ ** $p < .01$

Discussion

The goal of the present study was to explore the differential associations between the two types of prosocial behavior, empathy and aggression. The analysis of the results showed that most of the study hypotheses were supported. As suggested by previous studies, non-public prosocial behaviors are positively associated with empathy (Carlo & Randall, 2002; Lockwood et al., 2014). This seems congruent to the core principles of empathy and non-public prosocial behaviors. An empathic person is solely concerned with the best interest of another person, which is compatible with the intention of a person who helps in non-public settings. The positive association between public prosocial behavior and aggression can be approached identically to the abovementioned perspective. The association seems concurrent with the core principles of aggression and public prosocial behavior. Public prosocial behavior can be associated with the enhancement of one's self-worth and operates from motives similar to those underlying aggression. This similarity indicates that behaving prosocially in public settings could have negative implications for the people who are the recipients of helping behavior (Boxer et al., 2004; Carlo and Randall, 2002). Additionally the definition of aggression comprises the idea of hurting another person intentionally. Therefore, a positive relation between the two concepts is as expected. Public prosocial behavior and empathy were not significantly correlated and associated, and therefore the expectation of either no association, or a negative association was supported. Previous studies suggested the

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existence of a negative association between non-public prosocial behaviors and aggression (McDonald et al., 2011). A significant negative correlation was found between non-public prosocial behaviors and aggressive behavior. However, when controlled for age and gender in the multiple regression analysis, the analysis showed that a negative association was found, but it was not significant ($\beta = -.15$, $t(152) = -1.94$, $p = .055$) with an alpha level of .05. Therefore, this hypothesis was not supported. It is quite remarkable that there was no significant association. Public prosocial behavior was positively and significantly associated with aggression. Because of the antitheses between public prosocial behavior and non-public prosocial behaviors, it was to be expected that non-public prosocial behaviors would be negatively associated with aggression.

Although the study did not mainly focus on gender differences, a remarkable result was found concerning the non-significant impact of gender on aggression. Literature shows that men are more physically aggressive than women on numerous measures of aggression, while women are more likely than men to engage in relational aggression (Archer, 2002; Belgrave, 2009; Choi, Johnson, & Johnson, 2011). The PRA measures both physical and relational aggression, whereas the present study did not make this distinction. Thus, this could explain the non-significant impact of gender on aggression.

During the analysis a noteworthy result was discovered. To assess the correlations among the different non-public prosocial behaviors (i.e. altruistic, compliant, emotional, dire and anonymous prosocial behavior) bivariate Pearson's correlation coefficients (r) were calculated. The results showed low to medium correlations (with the exception of the correlation between dire and emotional prosocial behavior, $r(157) = .612$, $p < .001$). An exceptional result was the significant negative correlation between altruistic prosocial behavior and the other four non-public prosocial behaviors. When calculating the Cronbach's alpha for non-public prosocial behaviors, it was discovered that the Cronbach's alpha was .40 when including all five types of non-public prosocial behaviors, which is rather low. When altruistic and anonymous prosocial behaviors were excluded the Cronbach's alpha was .67, which is relatively high. Notwithstanding the significant negative correlation and low Cronbach's alpha, the decision was made to include altruistic and anonymous prosocial behavior as part of the non-public prosocial behaviors in this study. The reason for including altruistic prosocial behavior in particular, was the fact that altruism makes up a large part of the items composing the PTM (Carlo & Randall, 2002). Excluding altruistic prosocial behavior would therefore drastically change the composition of the questionnaire. Another reason to justify the inclusion of altruism is that the majority of studies on empathy and prosocial behavior focus on altruistic prosocial behavior. Altruism seems to be intertwined with non-public prosocial behaviors.

In terms of the limitations of this study, it is important to emphasize that the choice of using a convenience sample may not ensure the study sample to be representative of the entire Dutch population of young adults. Firstly, by obtaining the various data through the use of the researcher's private Facebook networks, the sample consisted solely of participants with specific characteristics possibly identical to the characteristics of the researchers. For example the sample of this study contained a high percentage of highly educated people. Secondly, because participants were recruited through Facebook, the environment in which participants completed the survey could not be monitored. This may have influenced the way participants answered the questions.

A second limitation is that the study data were obtained by the use of self-reports. The use of self-reports could possibly have led to social desirable answers, especially answers that regard aggression and prosocial behaviors. Therefore, in future studies, it would be useful to consider obtaining input through the use of experiments or observations.

Another limitation concerns the use of the English version of the PTM. Some participants did not complete the PTM. They may not have understood the English questions, and therefore were unable to answer them properly or at all. Another possible explanation for these missing data, could be that the participants might have thought the English questions were too time consuming.

The final limitation concerns the conclusions that can be drawn from the results. Public prosocial behavior was positively associated with aggression, but no significant association was found between public prosocial behavior and empathy. People who behave prosocially in front of an audience may be motivated by harmful or selfish intent (Carlo & Randall, 2001, 2002). Therefore, it could be expected that people who behave prosocially in front of an audience would have personality profiles that show high levels of aggression and low levels of empathy. However, the results of this study do not necessarily indicate that these people are not empathic as well. This could also be the other way around; people who behave prosocially in non-public settings would be expected to show high levels of empathy and low levels of aggression. Additionally, it could be possible that people's personality profiles include both high levels of aggression, as well as high levels of empathy. In accordance with this idea, personality profiles could also be showing low levels of both aggression and empathy. However, because aggression and empathy were treated as opposite constructs in this study, instead of focusing on the diversity of personality profiles, drawing conclusions about the results should be done with caution, for these speculations are not yet justified. Further extensive insight is needed on the possible association between personality profiles and the different kinds of prosocial behavior.

Conclusion

Given the limitations of the present study, it is important to be careful with drawing conclusions about the study results. Especially with generalizations about the entire Dutch population of young adults; these would not be highly accurate. It is quite remarkable that there was no significant association between non-public prosocial behavior and empathy; a negative association was expected. Future research should focus on the association between non-public prosocial behaviors and aggression.

The main goal of this study was to further explore the differential associations of two types of prosocial behavior with empathy and aggression. The results of the current study show that there is a positive association between public prosocial behavior and aggression. The possibility that behavioral interventions which focus on increasing prosocial behavior and decreasing aggressive behavior, encourage prosocial behavior that is actually driven by selfish or harmful intent, is therefore presumable. This may result in the increase of aggressive behavior. A positive significant association was found between empathy and non-public prosocial behaviors. This result suggests that when empathy is advocated in behavioral interventions, non-public prosocial behaviors will also be stimulated. Non-public prosocial behaviors were significantly and negatively correlated with aggression. The association between these variables was also negative, but not significant ($\alpha = .05$, $p = .055$). The non-significant association implies that aggression and non-public prosocial behaviors are not related. This result is rather peculiar and definitely not expected when taking the underlying intentions of both constructs into account. Extensive research is needed on this association. Behavioral interventions, regarding the decrease of aggressive behavior, should be specifically focused on non-public prosocial behaviors and not on public prosocial behavior. Further extensive insight is needed on more diverse, and therefore more representative samples. Behavioral interventions should consequently become more valid and effective and unwanted behavior will not be stimulated.

Concluding, it can be stated that prosocial behaviors should not be treated solely as a unitary construct. As the findings of the current study suggest aggression, besides empathy, could be an inherent part of prosocial behavior.

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