Sources, contents, and students' social learning about persons with a disability

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Sources, Contents and Students' Social Learning about Persons with a Disability

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A secondary analysis of survey data of Hong Kong school students (N = 2,865) examines social learning about persons with a (physical) disability (PWDs). Path models, connecting recalled information in communication about PWDs of different sources (media, significant others, and contact) and content (assistance, pity, and fear) with perceptions, general attitude, and behavior inclination toward PWDs, showed content as better predictor than either media channels or interpersonal sources. Interpersonal sources were better predictors than media channels were. The effects were also mediated by perception of PWDs' capabilities, perception of PWDs' inner state, and general attitude toward PWDs. The findings are interpreted and discussed.

Keywords: social learning; information source; content type; perceptions and attitudes; persons with a disability

The influence of the media on child development has long attracted scholarly attention. However, other information sources of socialization have rarely been investigated alongside the media, and cognitive development associated with the social categorization of groups, particularly of persons with a disability (PWDs), has been little addressed in communication studies. Comprehensive studies on the role of communication in PWD-related socialization may a) yield insight into the process of perception and attitude formation concerning PWDs in particular and social groups in general, and b) provide communicative explanations about this process. With this aim, the current study attends to the connection between exposure to several kinds of content about persons with a physical disability in different communication sources and the perceptions of and attitudes toward them among youngsters. Based on the United Nations' definition, in this study PWDs refer to persons who have long-term physical or sensory impairment and because of various barriers, they may not participate fully or effectively in society equally with others.

Our study was conducted from the perspective of social cognition in the communication socialization about social groups. We conducted a secondary analysis of the data selected from a large-scale survey of Hong Kong students' attitudes towards PWDs. Of interest in the responses were the communication content and sources that students recalled being exposed to, as well as the outcome of social learning from different kinds of content through both media and other communication sources. The study seeks to ascertain the relationships between behavior inclination towards PWDs, in addition to perceptual and other attitudinal factors. We first review the literature on socialization role of communication, social categorization, and disabilities to present a conceptual framework of the PWD-related social learning among youngsters. We then present the methods and results of our investigation. The report concludes with a discussion of the findings and their practical and theoretical implications.

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Communication and Socialization

Media's socialization role

Socialization and the learning of the norms and values of a society are basic communication functions. The mass media (media hereafter) in contemporary societies are major sources of information from which children learn and form their social views, including their perceptions of and attitudes toward different peoples and social groups. Although actual developmental impact of media is not yet fully understood, evidence has shown that the association between exposure to violent media content and children's aggressive behaviors is considerable, rivaling that between smoking and lung cancer in the general population (Strasburger, 2004). Media-related social learning about social groups may work in the same way to affect children's behaviors towards the groups concerned, especially given the content they are exposed to over time (e.g., Huesmann, 1988). Research has amply documented the stereotyping of social groups, such as by gender, race, ethnicity, and age, in a wide array of media content (e.g., Calvert & Wilson, 2008) and has found evidence of the influence of media on the social perceptions about these groups. Children may be susceptible to stereotypical beliefs because of their youth and their often excessive media consumption (e.g., Dixon, 2008). Exposure to media reportedly increases children's tendencies to agree with the depiction of sex-role stereotypes (e.g., Signorielli, 2001) and affects their choice of playmates from other ethnic groups (e.g., Greenberg & Mastro, 2008). However, little research is available in relation to PWDs.

Other socialization agents

Media are neither the only nor the predominant source of children's social information. Direct experiences with personal contact and indirect experiences through interpersonal communication with significant others at home and in school are an important part of socialization environment and help shape children's learning about various social groups (e.g., O'Keefe & Reid-Nash, 1987). Communication with significant others about social norms and norm construal highlights their crucial role as socialization agents (e.g., parents, teachers, and peers) to whom children connect with emotional ties. Strong relational connection has been found (e.g., Boer & Westhoff, 2006) to facilitate social learning in the communication of norms and to affect perceptions of subjective norms about safer sex among adolescents in South Africa.

Information from other sources also shapes children's knowledge about and social behaviors toward social groups (e.g., Balter & Tamis-LeMonda, 2003), particularly in the absence of direct experience. Parents are universally recognized as primary agents of gender role socialization. Based on the extant empirical studies on the mechanisms through which parents conduct racial and ethnic socialization, Hughes, Rodriguez, Smith, Johnson, Stevenson, and Spicer (2006) iterated that parents were a primary socialization agent in learning about social groups: dealing with other groups, attitudes toward social diversity, and related values, such as egalitarianism.

A particular source of knowledge about social groups is direct experience, or contact, which is also an important concept in intergroup relations. Contact theory (Allport, 1954), which holds that contact in optimal conditions can reduce prejudice toward other social groups, including PWDs, has been amply supported (Pettigrew & Tropp, 2006) and may also contribute to attitude formation and, particularly relevant to our purpose, learning about PWDs.

Persons with a Disability as a Social Group

Research on media's role in socialization about social categories has studied gender, race, and ethnicity. However, little research exists on non-dominant, under-represented groups, such as the poor, the elderly, and the disabled. Categorical differences aside, other factors that vary from group to group could affect learning about them. Disability, like ethnicity, gender, and age, is a social category with salience and explicit labels, which are two factors that contribute to stereotype formation in children (Bigler & Liben, 2007). However, unlike ethnicity, gender, and age, which are primary descriptive features of a person, disability is defined by the absence of common characteristics that are assumed to be the normal (WHO, 1980) and marked in ways that other social categories are not. In other words, PWDs tend to be marked as different: they are noticed because of their limitations (Hong Kong Equal Opportunities Commission, 2000). Consequently, disability is a superordinate descriptive in person perception, noted before gender and ethnicity (Rohmer & Louvet, 2009).

In racial or ethnic socialization, a child starts by learning about her or her own, often non-dominant, race, or ethnicity in contrast to other groups (e.g., Hughes, et al., 2006). Gender socialization similarly involves learning about one's own gender in contrast to others who are of the other gender. Socialization about PWDs, in contrast, involves learning about a social group to which the child does not automatically relate. Unlike learning about gender, race, and so on, learning about ability or disability is not part of primary socialization; ability as the normal simply is. The absence of intergroup contact also differentiates the development of perceptions and attitudes where PWDs are concerned (Rutland, Killen, & Abrams, 2010). In sum, this category is not prominent[1] in the social environment, except for a disabled child, because of self-involvement. Given the group's particularity, the study of socialization about PWDs may shed light on communication and socialization regarding diversity, the issue of stereotypes and related social attitudes, and it may offer insights about relevant education.

Learning about Persons with a Disability
PWDs, long associated with social stigma (e.g., Goffman, 1963), are generallyabsent in the mainstream media (e.g., Hardin et. al., 2001); when present, they are often portrayed stereotypically as needy and evoking pity or fear, which reflects common social perceptions and attitudes (e.g., Wright, 1973). Although positive images of disabled people have gradually increased in recent decades, the change is slow in some societies, including Hong Kong, which is the context of our study. Even in award-winning Hong Kong dramas and films, such as "The Legend of Ah Wong" and "Why Me", characters with impairments are shown to encounter social barriers in every aspect of life. Such regularly negative media depiction is a reason for concern that PWD-related perceptions and attitudes are stagnant and slow to change. Social norms, which are beliefs about what people commonly do and should do in a situation, have been shown to exert a powerful influence on a variety of behaviors (e.g., Cialdini, Reno, & Kallgren, 1990), including conduct toward socio-psychologically invisible PWDs.

Although few studies are available on socialization about PWDs in particular, media experience has been considered a major contributor to the development of stereotypes, prejudice, and discrimination (e.g., Graves, 1999). The communication literature suggests that media cultivate certain perceptions and understanding of the world over time and that learning occurs incidentally or intentionally in media consumption (e.g., Hetsroni & Tukachinsky, 2006). According to social cognitive

theory (Bandura, 1986), the learning and formation of perceptions and attitudes results from the interaction of personal, environmental, and behavioral factors, by which people receive reinforcement by their apprehension of live or symbolic models. Related to the focus of this study, the imagery in the media may cultivate certain interpretations or understandings of the social reality associated with PWDs, which is largely consistent with the media portrayal, whether positive and encouraging or stereotyped and biased. Furthermore, children reportedly are aware of not only the images of the disabled in media but also the way they are shown to fit in a social environment. The appropriateness of social interaction in the depicted behavior helps develop preferences in social interactions (Cohen, Nabors, & Pierce, 1994; Diamond & Tu, 2009).

In addition to the media, direct and indirect influences on children's PWD-related perceptions and attitudes come from the significant persons in their immediate environments, such as parents and other adults. For children in transition to adolescence, the influence of peers also emerges as they seek to redefine their identity in order to gain the recognition and acceptance of their peers. Social learning thus may cultivate negative attitudes because of the general societal bias against disability, which is conveyed through interpersonal social discourse (Casling, 1993; Killen, Richardson, & Kelly, 2010). It may also lead to varied attitudes in students, because of shifts in societal attitudes, as in the case of gender (Dreyer, Woods, & Sherman, 1981).

Research Questions
The extant literature has identified both media and persons of significance as socialization agents, which are important sources of information about PWDs. The literature also has shown that related social information and content of media and personal communication about PWDs tend to be stereotypical (e.g., being abnormal, deviant and thus fearful; incapable of contributing to society and thus pitiful; reliance on others, thus often getting other's help) (e.g., Wright, 1973). Although no available study has examined the crucial relationship between communication content and related social attitudes, the theorization of the effects of communication has established that communication, by supplying behaviors that children observe directly or indirectly, helps shape perceptions and attitudes through a symbolic modeling effect (e.g., Bandura, 1986). Communication studies on social learning about social groups, e.g., PWDs, are limited, and no studies are available on the actual operation of relevant factors, such as exposure to information (content and source) about PWDs, on which symbolic modeling is predicated (e.g., Huesmann, 1988). Hence, the application of theories of communication to the PWD-related learning process calls for studies to start from the basics: communication content (PWDs depictions) and specific information sources (media, persons of significance, contact) that deliver content. Both are part of the accessible event (Bandura, 1986) that is PWDs in our case and both help shape the formation of related perceptions and attitudes that are part of symbolic coding (Bandura, 1986), which may influence behaviors.
A survey of school students' attitudes and perceptions of PWDs provides an opportunity for such a study and is a step toward gaining new insights from ample evidence. To provide a direction for reexamining the data, the research questions are based on the relevant theorization, about the exposure to information about PWDs, and the perceptions and attitudes that are outcomes of learning about PWDs, or the potential long term effects on children. The first question is about the influence of information sources (media and interpersonal) on students.

RQ1: To what degree does the exposure to relevant information from media channels and interpersonal sources affect students' perceptions of and attitudes toward persons with a disability?

Regarding communication content and the influence on students' PWD-related perceptions and attitudes, two questions ask whether the type of content corresponds to perceptions and attitudes, specifically regarding the stereotypical depictions of PWDs as fearful (they are somehow not normal, thus scary), pitiful (they lack normal abilities, thus need help, and should be pitied) and needing assistance (they should be helped or assisted).

RQ2: How does content about persons with a disability (being scary, pitiful, and needing help) associate with perceptions of them?

RQ3: How does content about persons with a disability (being scary, pitiful, and needing help) affect attitudes toward them?

Social cognitive theory suggests that the association between communication and behavior is not direct. Similarly, theories on media influence have pointed out that communication events influence behavior through related perceptions and attitudes (e.g., Rosenberg & Hovland, 1960). Thus, indirect effects are also examined to determine whether they complement or compete with direct effects (Zhao, Lynch, & Chen, 2010). The content retained from communication is expected to shape perceptions and attitudes that influence conduct, utilizing the theory of planned behavior (Ajzen, 1991). Thus, a third research question is posed about this mediation.

RQ4: To what extent do perceptions of and attitudes toward persons with a disability, respectively, mediate the effect of information sources and content on related behavior intention?

Method
Sample
Data were collected from a disproportionate, stratified survey sample of Hong Kong primary- and middle-school students at four levels (primary 4 and secondary forms 1, 4, and 6), corresponding to the age groups of 9, 12, 15 and 17 years, in randomly selected schools that represented all three districts in the territory. To improve data and reduce the cluster effect caused by possible homogeneity in the data, half of the original data (N = 2,865) from 126 schools was randomly selected for the current study[2]. The gender ratio was 51.9% females and 47.9 % males; all were ethnic Chinese. The average age was 13.34 (SD = 3.549), ranging from 10 to 17 years. The school level distribution was about equal, from 24% to 26%. Family backgrounds showed a wide range.

Measurements
In addition to age, gender, family background, and school level, the survey items included communication about PWDs, contact with PWDs, and perceptions of and attitudes towards PWDs, covering cognitive, affective, and behavioral aspects. Contact is direct learning experience and the alternative to indirect learning through media and interpersonal communication.
    Communication variables were operationalized as recalled media channels and

interpersonal sources of information, as well as types of content. The media channel was measured according to the binary responses to six items (film, TV, book, magazine, radio, and newspapers) and dis/confirmed to have PWDs content, as specified. Contact was assessed with four items (have seen PWDs, often see; know, know well), as well as 'no' as a third choice for both cases. Interpersonal sources were assessed with three binary items for significant others (your parents, teachers, peers) and dis/confirmed to have talked about PWDs.

Information content items included three common depictions of PWDs (fearful, pitiful, and getting assistance) that were recalled to have been received or not from any sources. Fearful content was that of PWDs being frightening, disgusting (8 items). Pitiful content included the portrayal of pitiful, unfortunate, and needy PWDs (12 items). Assistance content suggested assistance extended to PWSs (4 items). The number count of all items (*yes* = 1, *no* = 0) was averaged for source and content.

Thirty-five items about attitudes toward and perception of PWDs deemed applicable in the Hong Kong context were selected from instruments widely used in disability studies (e.g., Antonak & Livneh, 1988; Yuker & Block, 1986), responded to on a 4-point scale (1- *completely disagree* to *4 – completely agree*), including perceived PWDs' capabilities and intelligence, self-perception, general beliefs of equality, a PWD-related approach (e.g., acceptance, intent of interaction, and willingness to assist), and avoidance (e.g., discomfort, fear) attitudes.

Factor Measures

To reduce the number of cognitive variables and uncover latent factors for robust measurement and meaningful testing, a factor analysis was first performed on attitudes and perceptions, using Mplus 5.2. Because the 35 items were ordinal variables, we employed the WLSM estimation (weighted least square parameter estimates)[3] with polychoric correlations[4] and promax oblique rotation. A four-factor structure was selected, based on the substantive reasoning of item content and the comparison of alternative structures (Table 1). The results of chi-square difference testing (Satorra & Bentler, 2001) showed that the four-factor structure prevailed over others. The fit indices, χ^2 (461) = 4536.988, p < .001, which was sensitive to large sample size, RMSEA = .056, and RMSR = .031, suggested that the factor model fit the data well.

The examination of the items revealed that two factors concerned attitudes and two concerned perceptions. One factor was labeled "interaction inclination," because the items reflected approach-avoidance behavioral attitudes ranging from avoiding (low) to approaching (high) PWDs in interaction, and they consisted of nine items (e.g., "I would like to meet children who are PWDs"; "I am willing to take classes together with them"). The second factor was named "general attitude," and included seven items that reflected implicit or expressed positivity (high) or lack of (low) in affect and attitude (e.g., "I feel they deserve our care"; "I feel much sympathy for PWDs"). The third factor was named (perceived) "PWDs capabilities" and included 11 items that reported the perceptions of PWDs' capabilities as follows: being less than normal (low) to normal (high), such as "I think PWDs can be very smart"; "I believe PWDs can be independent." The fourth factor was labeled (perceived) "PWDs inner state," ranging from low to high. The eight items were perceptions of PWDs' self-concept of normalcy (e.g. "I figure that PWDs must feel they are helpless"; "I think that most PWDs would rather not socialize with other people"). These perception factors corresponded substantively to the salient aspects of PWDs noted above: their observable disability and related self-concept by inference.

<Insert Table 1 here>

Path Models

Using the four newly uncovered factors and informed by the social cognitive theory of communication, we may improve the concreteness of the theoretical frame. This conceptual model specifies the antecedents of individual characteristics (demographics), sources, contents and contact, which represent the accessible event about PWDs and affect the perceived PWDs capabilities, perceived PWDs inner state and general attitude, thus indicating symbolic coding and cognitive organization. The three perceptional and attitudinal variables affect interaction inclination as a further attitudinal outcome and mediate between sources, content, contact, and interaction inclination.

Four path models of two nested pairs representing alternative learning mechanisms were built to identify an effect pattern that best fit the data, in order to verify the conceptual model and answer the research questions. Each model involved one or more potential mediators, and all variables were treated as latent constructs. The independent variables were demographics, source variables of media channel, M = 3.847, SD = 1.608, interpersonal source, M = 1.174, SD = 1.049, and contact, M =0.336, SD = 0.245; three content variables of PWDs were pitiful, M = 0.375, SD = 0.251, fearful, M = 0.047, SD = 0.110, and assisting, M = 0.363, SD = 0.281. General attitude, M = 1.562, SD = 1.241, perceived PWDs capabilities, M = 1.472, SD = 0.471, and perceived PWDs inner state, M = 1.830, SD = 0.471 were mediating variables, and the dependent variable was interaction inclination, M = 0.145, SD = 0.356 to indicate behavior intent.

In model 1 and model 2, all the independent (demographic and communication related) variables predicted perceived PWDs capabilities, perceived PWDs inner state and general attitude, each of which then further predicted behavior inclination, which was the only dependent variable closest to behavior. To test the direct effects of the communication variables, the paths linking all the independent variables, except demographics, predicted behavior inclination and were constrained to zero in model 1 and allowed to vary in model 2. In model 3 and model 4, all the independent variables predicted both perceived PWDs capabilities and perceived PWDs inner state, which respectively predicted general attitude and behavior inclination; general attitude also predicted behavior inclination. In the two path models, behavior inclination was predicted by all independent variables but demographics, which were allowed to vary in model 4 and were constrained to zero in model 3 for comparison. The confidence interval via bootstrapping (bias correction with 1000 resample) was obtained for the observed mediated effects (e.g., MacKinnon et al., 2002), which were considered more accurate than the normal theory confidence limits were (e.g., Shrout & Bolger, 2002).

Results
Model Testing

The path models were tested with maximum likelihood estimation and compared with log likelihood ratio tests, using Mplus 5.2. Model fit was evaluated with common fit indices, including chi-square, Comparative Fit Index (CFI), Tucker Lewis Index (TLI) Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR). The results showed that model 2 fit better than model 1 did (χ^2 (8) = 68.168, p < .001), and model 4 fit better than model 3 did (χ^2 (9) = 68.168, p

< .001). Model 4 prevailed with the lowest Akaike's Information Criterion (AIC) value (Table 2) in overall comparison.

<Insert Table 2 here>

Although the model fit was generally acceptable (χ^2 (15) = 312.822, p <.001, CFI = 0.921, TLI = 0.738, RMSEA = 0.084 , SRMR = 0.038), model 4 further improved after a prediction path was added regarding PWDs' perceived ability to PWDs' perceived inner state, as suggested by the modification index. Except the TLI model fit indexes (χ^2 (14) = 110.337, p <.001, CFI = 0.975, TLI = 0.909, RMSEA = 0.049, 90% CI = 0.041, 0.058, $P_{RMSEA <= .05}$ = .538, SRMR = .019), the final model fit the data very well (Hu & Bentler, 1999).

R squares showed that the variances explained by the independent variables were all significant. Specifically, 52.5% of variance in behavior inclination and 34.2% in general attitude were explained. Perceived PWDs capabilities and perceived PWDs inner state were relatively poorly explained (R squares < .08).

Direct Effects

The results indicated that females were likely to report higher perceived capabilities (β = -.032, p = .001), yet there was no significant gender difference in perceived inner state. The respondents at a higher school level were likely to report perceived capabilities and inner state closer to normal than their lower level counterparts did (β = .009, p = .02; β = .047, p = .006). Age had a negative effect on predicting perceived inner state but not on capabilities (β = -.022, p = .045). Younger respondents were more likely to perceive PWDs with normal inner state.

Pertaining to RQ1, media channel had a positive effect on behavior inclination (β = .009, p = .005) and a marginal effect on perceived inner state (β = .031, p < .10), but an insignificant effect on perceived capabilities. Interpersonal source positively predicted behavior inclination (β = .017, p = .016), negatively predicted perceived capabilities (β = -.018, p <.05), but was not significant in perceived inner state. Regarding content (RQ2, RQ3), fearful content negatively predicted the two perception variables: perceived capabilities (β = -.433, p < .001) and perceived inner state (β = -.861, p < .001); and negatively predicted inclination to interact (β = -.143, p = .001). Pitiful content had no significant effect on perceived capabilities. It negatively predicted perceived inner state (β = -.445, p = .01) and marginal negative effect on inclination to interact (β = -.064, p < .10). The assistance content positively predicted perceived capabilities, (β = .212, p < .001), perceived inner state (β = .465, p < .001), and behavior inclination (β = .07, p = .008). Last, contact positively predicted behavior inclination (β = .078, p < .001) and perceived capabilities (β = .055, p < .01), but had no significant effect on perceived inner state.

In the model, perceived PWDs capabilities and inner state both predicted general attitude toward PWDs (β = 1.029, p < .001 & β = .049, p < .001) and inclination to interact with PWDs (β = .688, p < .001 & β = .134, p < .001); thus, the results showed that attitudes were consistent with perceptions. Last, the more that the attitude towards PWDs was positive, the greater was the inclination to approach (β = .066, p < .001).

Mediation Effects

Because three potential mediators were in the model (perceived PWDs capabilities, perceived PWDs inner state, and general attitude) (Figure 1), unique mediation effects were of interest, regardless of overall effects (e.g., Preacher & Hayes, 2008).

Concerning RQ4, significant mediations were partial and complementary to the direct effects of the information variables on behavioral inclination. Direct effects and indirect effects via perceived inner state and general attitude were in the same direction. Specifically, there was a positive mediation of assistance content (indirect effect = .188, CI95% = .142, .253) and contact (indirect effect = .050, CI95% = .019, .084), and a negative mediation of fearful content (indirect effect = -0.373, CI95% = -.537, -.265). Pitiful content (indirect effect = -0.058, CI95% = -.123, -.003) had negative mediating effects only.

The model also displayed significant indirect effects only on the dependent variable of general attitude and complete mediation by perceived capabilities and perceived inner state. The mediation for prediction by both assistance content (indirect effect = .228, CI95% = .144, .340) and contact (indirect effect = .060, CI95% = .022, .111) were positive, whereas relevant direct effects were not present. Assistance content and contact were shown to contribute indirectly and positively to the general attitude. The mediation effects were negative for prediction from both fearful content (indirect effect = -0.461, CI95% = -.693, -.279) and interpersonal source (indirect effect = -0.015, CI95% = -.034, -.002), with no relevant direct effects present.

<Insert Figure 1 here>

Discussion

The path model displayed both direct and indirect effects of communication content, media channels, and interpersonal sources, as well as those of perceptions and attitudes, on behavioral inclination. Thus, a conceptual model with a specific effect mechanism was verified. It should be noted that the secondary analysis was post hoc, and thus inevitably constrained by related limitations, although the large probability-stratified sample provided assurance that the findings were generalizable to the relevant population.

The findings of information content showed that the influence on perception was in kind. The assistance content predicted perceptions of PWDs as having normal self-related inner state and normal capabilities, which supported previous findings that positive media portrayal was associated with positive attitudes (e.g., Farnall & Smith, 1999). Thus, our results confirmed that over time such exposure leads to relevant, positive perceptions and attitudes and were particularly associated with the portrayal of assistance with non-stereotypical learning. Assistance content was positive probably because it equalizes people, on the assumption that anyone may need assistance now and then, thus contradicting the stereotypes of helplessness and pitifulness. The opposite happens with larger magnitudes of content that evokes fear or pity. This content leads to less inclination to approach and contributes to stereotyped perceptions about PWDs, thus discouraging interaction.

Contrary to traditional (Chinese) thinking, pitiful depictions did not seem helpful in bringing about positive perceptions and attitudes. Content with implied sympathetic views seemed far from sufficient to counter and reinforce the stereotype that PWDs are needy and not normal. It is also possible that the traditional, positive view of having pity on PWDs has changed somewhat to align with contemporary thinking about individual human rights to reflect the Convention on the Rights of Persons with Disabilities (United Nations, 2006), a topic worth exploring in future studies. Fearful content appears to be more harmful than assistance content is helpful in the social learning of PWDs. Similar to pitiful content, fearful content contributes to stereotyped

learning and avoidance attitudes than assistance content alone does in reducing them. A practical implication is the prevention of negative perceptions and attitudes of this or any social group that needs to focus on eliminating fearful and pitiful portrayals.

Communication sources were surpassed by content, yet still posted noticeable effects. Media channels seemed to matter less than interpersonal communication sources did, despite their much greater presence, which highlights the greater role of significant others in students' social learning about PWDs. A practical implication of the finding is the need for the relevant civic education of the adult population so they could pass their learning to their children. The potential is considerable because one-third of students reported not having had anyone talk to them about PWDs. Similarly, interpersonal sources also negatively predicted the perceived capabilities of PWDs, which suggested that stereotypical information about PWDs is learned from significant others and pointed to the need for the education of the public. Notably, media channels displayed direct effects on behavior inclination, with no evident mediation by other factors, which is a point for the further theoretical exploration of the media socialization of social groups and inter-group interactions. Greater exposure to information of any sources may help create awareness or cultivate perceived familiarity with PWDs and thus a greater inclination to interact with such persons. Another practical implication is the greater awareness or familiarity because information from multiple sources may also help address the problem of the marginalization of PWDs , thus supporting the integration of PWDs from a different perspective.

Contact with PWDs was found to induce positive perceptions of the capabilities of PWDs as well as the inclination towards greater interaction, in relatively small ways. This study measured contact as having seen and known PWDs, both as neutral and noncompetitive. Information learned in this way may help in the formation of positive attitudes. This finding provides PWD-related evidence that supports the intergroup contact theory (Allport, 1954; Hewstone, 2003), which holds that voluntary and noncompetitive contact facilitates positive attitudes between groups. Contact with PWDs under these conditions may mitigate the effects of segregation, another factor contributing to stereotype formation (Bigler & Liben, 2007). More importantly, this finding calls attention to the need for neutral information and social learning about PWDs to promote better understanding and less biased perception. While positive content helps a little and negative content hurts much, neutral first-hand information has a critical role to play. The implication for educational policy is the creation of opportunities for contact with PWDs to encourage learning by direct experience.

In sum, our finding that the direct effects of communication variables, in addition to mediated effects, calls for greater attention to the role of communication in social learning about PWDs. A theoretical implication pertains specifically to related socialization, in that theorization is profitable from a communication perspective. Our findings are consistent with the findings of previous work on cognitive categorization (e.g., Wicks, 1992), which found that that media effects are caused by the interactive process of media consumption, everyday social interactions, including personal experience, interaction with others, and individual characteristics (e.g., Bryant & Oliver, 2002), socialization theory should include multiple sources of communication (interpersonal communication, media, and direct experience in contact) to explain learning about PWDs, particularly social groups (race, ethnicity, gender, age, etc.). Moreover, as antecedents of PWD-related attitudes, specific types of content are important in the conceptualization of communication effects and the socialization theorization of social groups (e.g., Kirkorian, Wartella, & Anderson, 2008). Third, the

findings point to considerations of the conceptualization of the particularities of specific groups and the ways that categorical features affect the communication and learning about a social group.

Perceptions and General Attitude
The perceptions of the capabilities of PWDs showed the largest effects in the model, predicting perceived inner state, general attitudes, and behavioral inclinations, which suggests its importance in communicating and learning about PWDs. The findings verified that the limitations of PWDs being the focus of attention (Hong Kong Equal Opportunities Commission, 2000) deserves theoretical attention in related social cognition. This perception was more substantial than perceived inner state or general attitude toward PWDs in predicting and mediating the effect on behavioral inclination and directly affected the perceived inner state. The latter effect may have to do with the social norm of associating the individual's self-concept with his or her capabilities, so that greater or lesser capabilities entail a more or less positive self-concept; this norm may have also been conveyed in socialization. The findings showed that students' attitudes and perceptions of PWDs' capabilities and inner-state tended to be positive, but their behavioral inclinations were low in comparison, which indicates the need for future studies to identify explanations in addition to those investigated in this study and to address the challenge of PWD-related civic education for the integration of PWDs into the mainstream of Chinese society.

The correspondence between the perceptions of and attitudes toward the capabilities of PWDs is consistent with cognitive consistence theory (Festinger, 1957). Their mediation in relevant socialization supports social cognitive theory, as well as theories of media influences, with theoretical implications for the socialization of social groups in general. The findings that the perceptions of the inner state of PWDs mediated the effects on general attitude from both assistance content and contact and that the perceptions of the capabilities of PWDs mediated the effects on general attitude of both fearful content and interpersonal sources, provide evidence of the relationship between perceptions and attitude in learning about PWDs. The relevant effects (of assistance content and contact as direct information source) went through complementary mediation, which demonstrated the indirect, enhancing role of such perceptions. Similar mediation occurred in the prediction by pitiful and fearful content, which was also in the same direction, thus adding to their effect. The results indicated that different perceptions mediate social learning through communication in the same way that they indirectly affect students' general attitudes toward PWDs. The theoretical implications are that mediating perception factors should be incorporated in attitude formation related to PWDs and other social groups, such as race or ethnicity.

Limitations and Conclusion
This study was inevitably constrained by the variables that it included. Given the nature of the data, the findings and insights should be taken as tentative. Self-reported attitudes typically do not reflect actual behavior and thus are a limited reflection of reality. Future investigations should consider adding behavior to attitudes. Moreover, the current study was unable to consider cultural factors, which also limits its generalizability. The developmental stage of some respondents here necessitated a simplistic and crude assessment of communication sources and content. Future work should use more refined measurements to include more nuanced sources and content

to test effects (e.g., Mares& Acosta, 2008; Farnall & Smith, 1999), for a comprehensive study of social learning.

In conclusion, this study produced evidence about the ways that communication factors account for students' behavioral inclinations toward PWDs. The findings here showed that content about assistance contributes to positive attitudes whereas pitiful and fearful content contributes to negative attitudes and stereotypes. In social learning about PWDs, personal influence plays a stronger role than media do. Thus, interpersonal communication should be used in PWD-related civic education both inside and outside schools. At the same time, other sources cannot be overlooked, even those with small effects.

Notes
1. This large-scale survey of primary and secondary school students showed only about 37% reporting parents, about 50% reporting teachers, and 30% reporting peers as a content source. Almost one third (32%) reported media as the only source, which was evidence that disability is generally not a topic in people's daily communication.
2. The intracluster correlation coefficient of a quarter of the original sample was minuscule, <0.01 for three factors and <.004 for the last one, while the group means reliability estimates (Bliese, 2000) were between <.2 and <.5, suggesting that possible cluster effects were negligible.
3. The procedure works on a diagonal weight matrix with standard errors and mean-adjusted chi-square test statistic that uses a full weight matrix and returns asymptotically correct results (e.g., Muthén & Kaplan, 1992).
4. This is a non-parametric test appropriate for ordinal data (e.g., Cohen, Manion, & Morrison, 2000).

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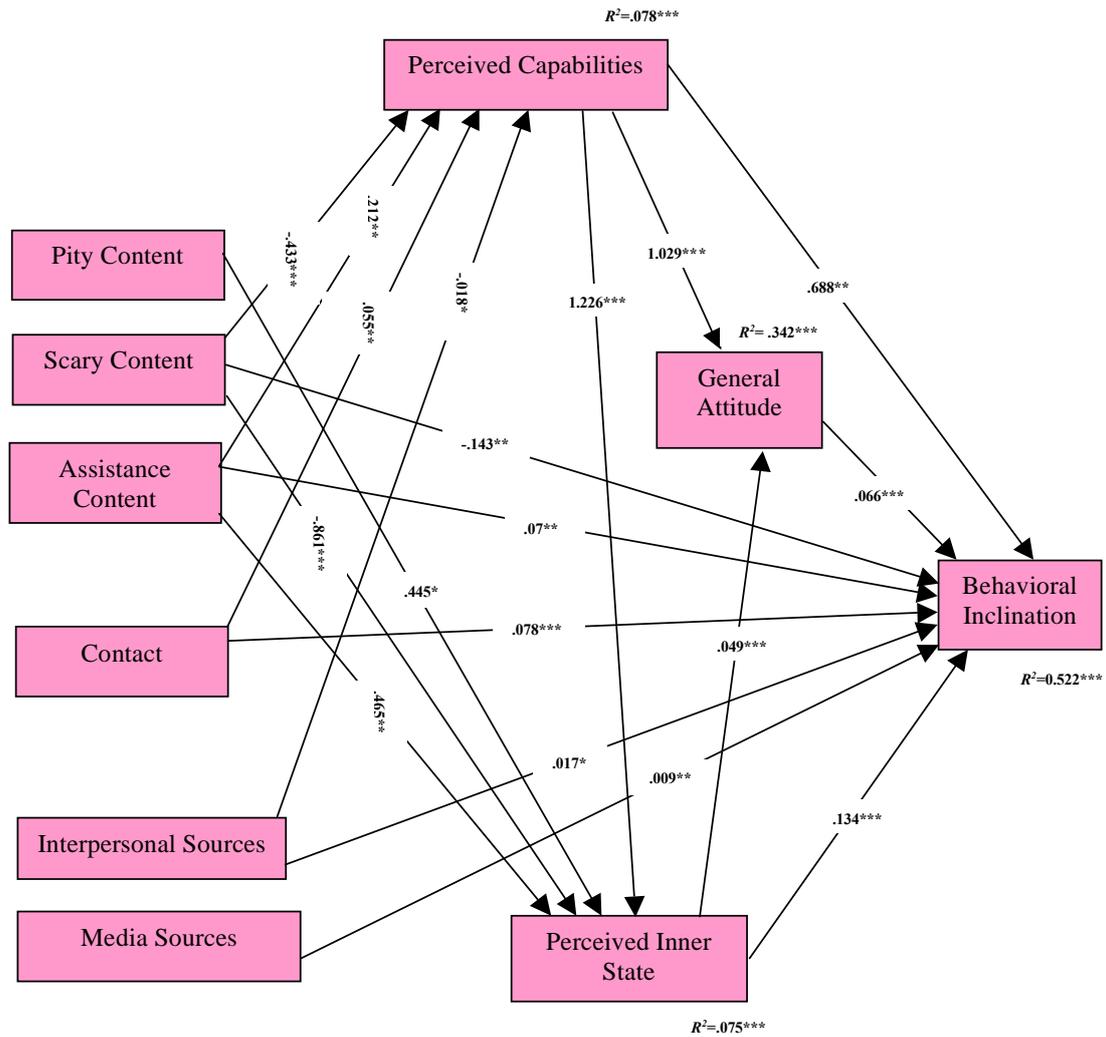
Figure 1.

Path model with perceived PWDs capabilities, perceived PWDs inner state and general attitude as mediators, presenting statistically significant paths determined by communication-related variables.

* *p* <.05, ** *p* < .01, *** *p* <.001

Table 1
Factor Correlations

	I. Behavior Inclination	II. General Attitude	III. Perceived PWDs Capabilities
II. General Attitude	0.459		
III. Perceived PWDs Capabilities	0.519	0.566	
IV. Perceived PWDs Inner State	0.493	0.236	0.388

Table 2
Model Comparisons

	Log likelihood	df	AIC	Log likelihood ratio test
Model 4	-31868.59	43	63823.18	202.484[a]
Model 4 with modification	-31767.35	44	63622.70	68.168[b]
Model 3	-31902.68	35	63875.35	
Model 2	-32375.92	52	64855.83	68.168[c]
Mode 1	-32410.00	44	64908.00	

Note: [a]between model 4 and model 4 with modification; [b]between model 4 and model 3; [c]between model 2 and model 1