Transportation self-efficacy and problem solving

**Transportation Self-Efficacy and Social Problem-Solving
of Persons who are Blind or Visually Impaired**

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Abstract

Social problem-solving skills and transportation self-efficacy were assessed for 48 vocational rehabilitation consumers with visual disabilities who required assistance securing work transportation. Social problem-solving was at the upper end of the normed average; transportation self-efficacy averaged 101.5 out of 140. Level of vision loss was not associated with score differences; urban residence related to slightly higher self-efficacy than suburban/rural.

Participants appeared to have the skills necessary to secure employment transportation, but were less confident about transportation-seeking activities that required more initiative of social interaction. Training and information may help consumers gain confidence in these tasks and increase viable transportation options.

Key words: blindness, visual impairment, transportation, problem-solving, self-efficacy

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Transportation, either public or private, continues to be a challenge for various populations, including persons with disabilities, and particularly for persons with visual disabilities. Yet transportation serves as a link to important activities, such as employment and community life, and is regarded as integral to independence (National Organization on Disability, 2013). Because negotiating transportation arrangements can be complex, especially for persons living in rural areas where public transportation is frequently unavailable, it is important that persons who are blind or visually impaired have the problem-solving skills and transportation self-efficacy to make these arrangements. The present study investigated the social problem-solving skills and transportation self-efficacy of persons who are blind or visually impaired and identified by their vocational rehabilitation counselors as needing assistance securing transportation to and from work.

The importance of transportation and its impact on daily life is evidenced by the fact that eight federal agencies have approximately 80 programs addressing transportation services for persons who are regarded as "transportation-disadvantaged" (Government Accountability Office, 2013). Persons who are transportation-disadvantaged include those who have disabilities, are elderly, and/or have low income, and are unable or have difficulty accessing public or private transportation (GAO, 2013). Additionally, persons with disabilities living or working in rural areas have more limited transportation options (Gonzales, Stombaugh, Seekins, & Kasnitz, 2006).

While the Americans with Disabilities Act (ADA) of 1990, requires that public transportation be accessible to persons with disabilities, persons who are blind or visually

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impaired continue to experience problems with accessibility. These barriers include locating

transit stops that are not appropriately marked, transit stops that have unsafe routes to reach

them, or drivers who do not call out the stops. When private transportation is the only option,

persons with visual disabilities are further limited as they typically do not benefit from vehicular

modifications that may aid persons with other disabilities. Use of service animals may present

additional obstacles to private transportation as drivers may have allergies or choose not to allow

animals in their vehicles.

Lack of access to transportation has a negative impact on quality of life for persons with

disabilities (Samuel, Lacey, Giertz, Hobden, & LeRoy, 2013), particularly with regard to

employment. Persons who are blind or visually impaired in both the United States (Crudden,

Sansing, & Butler, 2005) and Canada (Gold & Simson, 2005) have identified transportation as an

employment barrier. Also, youth who believed their transportation was easy or somewhat easy

were more likely to be employed than those who perceived problems with transportation

(McDonnall, 2011).

Vocational rehabilitation providers may provide travel and related expenses to persons

with disabilities engaged in a rehabilitation program. These services may include reimbursement

for travel expenses associated with rehabilitation activities, assistance with applications for

reduced fare and accessible paratransit systems, referral to other community transportation

options, reimbursement for employment related travel expenses for a defined period, and for

persons with visual disabilities, orientation and mobility training. How these services are

provided may vary across and even within rehabilitation agencies.

Social Problem-Solving and Transportation Self-Efficacy

Social problem solving is typically regarded as the cognitive-behavioral process of generating potential solutions to a specific problem in everyday life, selecting the option most likely to result in positive problem resolution, and evaluating the consequences of the choice (D'Zurilla & Nezu, 2007). Social problem-solving includes two dimensions, a positive orientation that involves viewing problems as challenges that can be overcome with a commitment of time and effort, and a negative orientation that involves viewing problems as threats with insecurity about the ability to resolve problems and a tendency to become easily frustrated and upset. This frustration may increase the likelihood that similar challenges will be avoided in the future. Three distinct styles are associated with problem solving; one is effective and is characterized by a rational and systematic use of problem-solving skills. Persons using this adaptive problem solving style tend to carefully identify potential solutions and obstacles, and continually evaluate possible outcomes of alternative solutions as they are attempted. The other two styles are less effective and are characterized by impulsivity/carelessness or avoidance/dependence. Persons using an impulsive style tend to carelessly and incompletely evaluate options, quickly choosing a solution that may be ineffective. Persons who take a more passive approach tend to either avoid the problem hoping it will resolve on its own or depend on others to resolve the problem (D'Zurilla & Nezu, 2007).

The problem-solving process can be used in arranging transportation for employment (Perla & O'Donnell, 2004). For example, potential employees might generate options for travel to and from work; evaluate the cost, reliability, and convenience of each option; choose the appropriate option; and evaluate the success of the choice. This process typically involves

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sequential tasks with success at each step dependent in part on successful completion of the previous step.

Self-efficacy is a person's confidence in their ability to effectively accomplish specific tasks (Bandura, 1994). Self-efficacy plays a major role in how goals, tasks, and challenges are approached. People with high self-efficacy approach difficult tasks as challenges to be mastered, set challenging goals for themselves, and quickly recover from setbacks. Conversely, people with low self-efficacy tend to avoid difficult tasks, have low aspirations and weak commitment to their goals, and quickly lose confidence after setbacks. The most effective way to develop strong self-efficacy is by successful experience (Bandura, 1994). Therefore, persons with high transportation self-efficacy would be expected to have been successful in making transportation arrangements in the past.

This study examined the social problem-solving skills and transportation self-efficacy of persons who are blind or severely visually impaired who were identified by their state vocational rehabilitation counselors as needing assistance arranging transportation to and from work. We hypothesized that those identified as needing assistance with employment transportation would have low social problem-solving skills that might include either a negative problem orientation and/or an ineffective problem-solving style. Further, we hypothesized that persons needing assistance with transportation would have low transportation self-efficacy based on their previous or expected lack of success or confidence in their ability to master transportation related tasks.

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Method

Participants

Vocational rehabilitation counselors referred 54 consumers for participation in the project. Of those, 48 agreed to proceed after being read informed consent documents. Participants ranged from 19 to 63 years of age with a mean of 39.2 years and a standard deviation of 12.3 years. More men (n=26) than women (n = 22) participated, and there were more White/Caucasian (n=26) than Black/African American (n=22) participants. Thirty-three participants were identified as legally blind, and 15 as visually impaired. Consumers were from a southeastern state, living in urban (n=35) or suburban/rural (n=13) areas, and all had active cases with the state vocational rehabilitation agency.

Procedure

Through an agreement with the state vocational rehabilitation agency, counselors identified and referred consumers who were blind or visually impaired and in need of assistance securing employment related transportation. Counselors obtained consent from consumers prior to referral. Upon receipt of referral, each consumer was contacted by telephone and provided verbal consent to participate in the project consistent with established procedures approved by the Institutional Review Board for the protection of human subjects. All participants were part of a larger study investigating the effectiveness of a transportation intervention that spanned approximately 18 months.

Criteria for referral to the project initially included: having blindness or visual impairment, having an identified job, and needing assistance identifying and/or securing transportation to and from work. Because an inadequate number of referrals were received, the

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requirement that the consumer have an identified job was eliminated. Participants were also

recruited through contacts with consumer groups and various electronic mailing lists associated

with services in the state to persons who are blind or visually impaired. Participants who learned

about the project through other sources were required to contact a rehabilitation counselor, have

their case open (or re-opened) with the state agency, as well as meeting the other referral criteria.

Consequently, the sample included persons with visual disabilities who were identified as having

or seeking employment, were consumers of the state rehabilitation agency, and were identified as

needing assistance identifying and/or securing employment related transportation.

Instruments

Each participant completed a telephone-administered series of instruments that included

the *Social Problem-Solving Inventory, Revised, (SPSI-R) short form* and a measure of

transportation self-efficacy. The *SPSI-R:S* measures problem-solving skills, or the ability to

resolve problems of everyday life, by assessing both constructive (i.e., positive problem

orientation and rational problem solving) and dysfunctional (i.e., negative problem orientation,

impulsivity/carelessness, and avoidance) dimensions (D'Zurilla, Nezu, & Maydeu-Olivares,

2002). Respondents rated themselves on a scale from 0 (Not at all true of me) to 4 (Extremely

true of me) on 25 items. The *SRSI-R:S* has established reliability (.87) and construct validity

(Relative Noncentrality Index = .86) as a measure of how people solve problems in their social

environment (D'Zurilla et al.).

To increase the predictive nature of self-efficacy assessments, measures of self-efficacy

should be designed to be domain specific (Bandura, 1997). While there are a variety of

instruments designed to assess self-efficacy in diverse domains, there was not an existing scale

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prior to this research that measures self-efficacy for seeking and arranging transportation. To address this need, we developed a 14-item instrument to measure transportation self-efficacy. Respondents rated their confidence, on a scale from 0 (no confidence) to 10 (complete confidence), in their ability to perform various employment related transportation tasks that included finding transportation, accessing transportation, determining reasonable costs, and developing a transportation plan. Table 1 provides an abridged version of instrument items.

The development of this instrument was modeled in accordance with recommendations from experts in self-efficacy scale construction (Bandura, 2006). We identified specific domains of functioning related to transportation and consultants who were blind or visually impaired assisted in identifying specific transportation challenges. Content review by experts in the field and extensive pilot testing were conducted. The instrument was modified in response to feedback, and the final version yielded high face validity. Additional validation of this instrument is in progress, as it is a component of a larger study.

Results

Results indicated that both social problem-solving skills and transportation self-efficacy appear adequate to perform tasks associated with identifying transportation options, evaluating options, negotiating travel arrangements, and evaluating the appropriateness of transportation choices. The *SPSI-R* measured problem-solving styles resulting in an overall standardized score with subscores on five dimensions. Normed data for the overall measure, as well as each dimension, has an average range between 86 and 114. Participants in this study scored in the upper end of the normed average overall on this measure (M = 109.96, SD = 14.31), indicating that their problem-solving skills are at least average in comparison to the general population.

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Table 2 provides the means and standard deviations for the five dimensions that encompass problem-solving styles assessed by this measure: positive orientation, negative orientation, rational, impulsive/careless, and avoidance. The results of performance on each dimension indicate that participants are also at least average (within the range of 86 to 114) in their problem-solving styles. Scores on positive problem-solving orientation (M = 114.58, SD 13.09) and rational problem-solving (M = 113.08, SD = 19.06) were particularly high, indicating that participants are likely to be successful problem-solvers. High scores in these dimensions indicate optimism and perseverance in problem-solving, as well as a tendency to view problems as challenges rather than threats. Participants scored in the lower-middle range of average for the other three dimensions (negative orientation, impulsivity/carelessness, and avoidance) which indicates that they have confidence in their ability to systematically solve problems and are not likely to become frustrated or upset when facing problems.

The transportation self-efficacy scale asked participants to rate their confidence in their ability to complete transportation-related tasks from 0 (none) to 10 (complete confidence). The mean score for self-efficacy was 101.50, from a possible high of 140. Means on individual items ranged from 5.2 to 8.9. Table 1 provides the means and standard deviations (SD) for each item as well as a breakdown of the percentage of individuals rating their confidence for each item as low (scores 0-3), medium (scores 4-6) , or high (scores 7-10). More than 85% of participants rated themselves as having high confidence in explaining to a driver where to go (M = 8.9, SD = 2.1), asking for assistance upon arrival at destination (M = 8.8, SD = 2), and riding a bus or shuttle (M=8.6, SD =2.4). Lower confidence rates were reported for arranging a ride with someone working nearby (M = 5.2, SD = 3.4), using the internet to find transportation options (M = 6.1, SD = 3.8), finding and hiring a driver (M = 6.6, SD = 3.2), and arranging a ride with coworkers

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(M = 6.6, SD = 2.9). For each of these items, at least 45% of participants rated their confidence on the low/medium end of the scale, and 62% rated their confidence as low/medium in their ability to arrange a ride to work with someone working at a nearby business.

Multivariate analyses of variance were performed to test for any differences on measures between groups of participants based on level of vision loss. No differences were found on either of the two measures between those who were blind and those who were visually impaired, $F(45, 2) = .373$, $p = .69$. A similar analysis based on participants' residence in urban or suburban/rural settings also indicated no significant differences on the two measures, $F(45, 2) = 2.449$, $p = .098$, although the univariate analysis of self-efficacy approached significance at $F(46, 1) = 3.867$, $p = .055$, with participants in urban settings reporting higher transportation self-efficacy (M = 105.5, SD = 22.3) than those in suburban/rural settings (M = 90.7, SD = 25.5).

Discussion

The hypothesis that persons who are blind or visually impaired and in need of assistance securing employment related transportation have low social problem-solving skills was not supported by the data. Further, the data failed to support the hypothesis that persons needing assistance securing employment related transportation would have low transportation self-efficacy. Participants were identified by their rehabilitation counselors as needing assistance securing transportation to work and those who participated in the study acknowledged this need for assistance. Yet their scores in social problem-solving indicate that these individuals would be expected to have the skills necessary to achieve this task, and scores on the self-efficacy instrument indicate participants have confidence in their own abilities to secure transportation,

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particularly if they reside in an urban setting where they are likely to have more transportation

options.

The limited transportation options available to persons with visual disabilities,

particularly those in rural areas, may explain why, despite adequate levels of social problem-

solving and transportation self-efficacy, they experience difficulty securing transportation to and

from work. Participants who live in areas with established social support systems may be

unwilling or unable to relocate, thus further limiting their transportation options. Additional

factors, such as limited job opportunities in the current labor market and the high cost of

transportation can further impact transportation decisions. While problem-solving strategies and

self-efficacy may enable one to identify potential transportation options, these options may not

be viable for the long term transportation required of someone attempting to maintain

employment. Further, given the complexity of transportation issues for persons with visual

disabilities, average or even slightly above average problem-solving skills and transportation

self-efficacy may not be sufficient to successfully negotiate transportation tasks. Potentially,

persons who are blind or visually impaired need skills that are significantly higher than the

normal range.

Service providers should note that some of the tasks that yielded lower transportation

self-efficacy scores are tasks that could be addressed as a part of the rehabilitation process. For

example, discussions and possible practice sessions with persons who are blind or visually

impaired regarding how to arrange rides with co-workers and/or those working nearby might

help them feel more confident in their ability to perform those tasks. The process of finding,

screening, and hiring a driver as well as negotiating associated fees for that service are other

areas where service providers can provide information and assistance. Finally, using the Internet

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to find options is an alternative that many participants, particularly those in rural areas, may not believe is helpful or they might not be skilled in using the Internet. Training in computer skills and an introduction to the information available on the Internet might be useful in researching transportation alternatives. Additionally, given existing research that supports reframing threats as challenges to increase self-efficacy, service providers should consider actively encouraging consumers to view transportation related issues as challenges that consumers are capable of overcoming, rather than as obstacles to be avoided. Service providers should also be aware that even persons who are effective problem solvers with confidence in their abilities may have difficulty making transportation arrangements for work and providers should consider engaging in active discussions about transportation with persons who are blind or visually impaired.

Further research to identify the factors that impede securing employment related transportation is indicated. This research should include an analysis of how persons without employment transportation evaluate their transportation options, particularly in terms of cost and convenience. It may be that persons experiencing difficulty with employment related transportation have effectively evaluated their options and conclude that none are acceptable. Additional research regarding how well informed people who are blind or visually impaired are about their transportation options would also be helpful in determining if information and referral services could benefit this population.

Generalization of these results is cautioned given that the sample was not randomly selected and includes persons who are blind or visually impaired in only one state. Future research should include a national sample and include both persons who are and are not experiencing difficulty finding transportation. Additionally, all data is based on self-report and participants' ratings of their confidence in performing a task may or may not correspond to their

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actual ability to do so. Social desirability bias may have influenced responses given that

instruments were administered by telephone interviewers. Administering the instrument via a

computerized system might be helpful in overcoming this bias. Finally, the researchers

constructed the self-efficacy instrument used in this study and reliability and validity data are not

yet established.

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Table One

Transportation Self-Efficacy Items	Low	Med	High	Mean	SD
1. Call agencies to schedule/request transportation	10.9%	17.4%	71.7%	7.9	2.9
2. Find and hire a driver	16.7%	29.2%	54.2%	6.6	3.2
3. Arrange a ride with co-workers	13%	32.6%	54.3%	6.6	2.9
4. Arrange a ride with someone working nearby	28.9%	31.1%	40%	5.2	3.4
5. Arrange a fair price with a driver	8.5%	17.0%	74.5%	7.6	2.9
6. Use the internet to find transportation options.	31.1%	17.8%	51.1%	6.1	3.8
7. Identify 2 or more transportation options	8.3%	18.8%	72.9%	7.7	2.6
8. Find out about costs for transportation options	8.5%	21.3%	70.2%	7.5	2.8
9. Ride a bus/shuttle	4.2%	10.4%	85.4%	8.6	2.4
10. Explain to a driver where to go	4.2%	4.2%	91.7%	8.9	2.1
11. Ask for assistance at a destination	4.2%	6.3%	89.6%	8.8	2.0
12. Earn enough money to pay for transportation	12.8%	17%	70.2%	7.8	3.1
13. Find my own transportation	8.3%	29.2%	62.5%	7.2	2.6
14. Create a back-up plan for transportation	12.8%	21.3%	66%	7.0	2.9

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Table Two

Problem-Solving Style	Mean	SD	Interpretation of Higher Scores
Positive Orientation	114.58	13.09	Problems are viewed as solvable challenges rather than threats; belief in ability to be successful
Negative Orientation	96.67	17.79	Problems are viewed as threat to well-being; doubts ability to solve problem
Rational	113.08	19.06	Careful and systematic approach to problem-solving; likely to perform effectively in problem-solving situations
Impulsive/Careless	97.52	15.22	Impulsively choose first option; unsystematic evaluation of alternative solutions; likely to be ineffective in problem-solving
Avoidance	95.83	12.46	Avoid problems rather than confront; attempt to shift responsibility to others; likely to be ineffective in problem-solving