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From barrier elimination to barrier negotiation: A qualitative study of parents' attitudes about active travel for elementary school trips

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ABSTRACT

This paper examines parents' responses to key factors associated with mode choices for school trips. The research was conducted with parents of elementary school students in Denver Colorado as part of a larger investigation of school travel.

School-based active travel programs aim to encourage students to walk or bike to school more frequently. To that end, planning research has identified an array of factors associated with parents' decisions to drive children to school. Many findings are interpreted as 'barriers' to active travel, implying that parents have similar objectives with respect to travel mode choices and that parents respond similarly and consistently to external conditions. While the conclusions are appropriate in forecasting demand and mode share with large populations, they are generally too coarse for programs that aim to influence travel behavior with individuals and small groups.

This research uses content analysis of interview transcripts to examine the contexts of factors associated with parents' mode choices for trips to and from elementary school. Short, semi-structured interviews were conducted with 65 parents from 12 Denver Public Elementary Schools that had been selected to receive 2007–08 Safe Routes to School non-infrastructure grants. Transcripts were analyzed using Nvivo 8.0 to find out how parents respond to selected factors that are often described in planning literature as 'barriers' to active travel.

Two contrasting themes emerged from the analysis: barrier elimination and barrier negotiation.

Regular active travel appears to diminish parents' perceptions of barriers so that negotiation becomes second nature. Findings from this study suggest that intervention should build capacity and inclination in order to increase rates of active travel.

1. Introduction

School-based active travel programs aim to encourage more students to walk or bike to school more frequently than they currently do, potentially reversing a thirty year trend of increased private automobile use. Statistics revealing the historic decline in active travel are discussed elsewhere (see for example McDonald, 2007; Sirard and Slater, 2008). This paper examines parents' experiences of the school commute in order to guide the development of that type of travel-behavior intervention.

Increasing rates of active school travel promises a range of benefits to children, their families and their communities. Policy makers take particular interest in active travel programs in order to decrease traffic congestion around schools (Pooley, 2005), to decrease the numbers of short car trips in general (Black et al., 2001; Akar and Clifton, 2009; Austroads, 2005), and to improve children's health by increasing time spent in moderate physical activity (Davison et al., 2008; Tudor-Locke et al., 2001; Ogden et al., 2002; Cooper et al., 2005). For example, the U.S. Department of Health and Human Services has identified increasing rates of walking and biking to school as a policy objective in Healthy People 2020 (USDHHS, 2011). A range of programmatic strategies have been used to accomplish that objective, although some researchers argue that early efforts have been based more on intuition than evidence (Davison et al., 2008).

Planning research conceptually outlines three dimensions of individual travel behavior: obligations, opportunities and inclinations (Stradling and Anable, 2008, Chapin, 1974). Those dimensions reflect in more specific models for children's school travel (McMillan, 2005), but stem from psychological models of choice behavior which discuss opportunities in terms of real and perceived behavioral control (Dijst and Schwanen, 2008; Walker, 2006; Parkany et al., 2004). Eagly and Chaiken (1993) posited that in attitudinal studies, researchers use perceived behavioral control as a proxy for real behavioral control to overcome the difficulty of measuring the latter concept. Findings

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from this study demonstrate a unique relationship between the two concepts that is worthy of further investigation.

Given the obligation of school attendance, school-based active travel policies and interventions address the other two broad dimensions: opportunities for children to walk and bike to school, and the inclination of children (and their parents) to take advantage of those opportunities when they are given. Individual programs address the two influences in varying degrees. For example, the Safe Routes to School (SR2S) program uses a comprehensive approach that includes engineering, education, enforcement, encouragement, and evaluation, addressing opportunities as well as inclinations to walk or bike (Hubsmith, 2006). By addressing engineering and enforcement, SR2S infrastructure programs aim to provide adequate infrastructure and thus support opportunities for children to walk or bike to school. Complementing that effort, SR2S non-infrastructure programs provide educational programs, incentives and other events to encourage children and parents to walk or bike, and thus to take advantage of opportunities for active travel.

In order to address the opportunities and inclinations that influence travel behavior, it is necessary to know which specific conditions influence parents' choices. Planning research has identified a vast array of environmental (e.g., distance to school, busy road, intersection density, etc.) and personal factors (e.g., family approval, employment, parent BMI, etc.) associated with parents' decisions to drive children to school (see for example Sirard and Slater, 2008; Davison et al., 2008; Pont et al., 2009).

In many cases, factors associated with car trips are interpreted as barriers to active travel (Davison et al., 2008; Dellinger and Staunton., 2002; Sirard and Slater, 2008; Cole et al., 2010; Pont et al., 2009), suggesting that parents who encounter those conditions will choose to drive if a car is available, rather than walk or bike. Although certain conditions may be strongly associated with driving, active travel still occurs at least part of the time for part of the population, indicating that the barriers are not absolute.

The purpose of this study was to find out how parents negotiate adverse conditions when they choose to walk or bike their children to school. It expands current understanding of mode choice by examining a sometimes-fuzzy line between opportunity and inclination, and between perceived and actual behavioral control. The research team used qualitative methods to re-contextualize certain factors that are often interpreted as 'barriers' in quantitative research. Data included transcripts from 65 interviews conducted with parents of elementary school students in Denver Colorado as part of a larger study of school travel behavior. Findings from this study suggest that parents' perceptions of opportunities relating to the school commute are as much a function of their inclination to walk as they are a description of the opportunities afforded by environmental conditions. We discovered a range of attitudes that included passive expectations for barrier elimination as well as active efforts to negotiate barriers. Regular active travel appears to diminish parents' perceptions of barriers so that negotiation becomes second nature. These findings suggest that to increase rates of active travel, intervention should build families' inclination, experience and capacity for the activity by helping them to plan the trips in advance, by disassociating active travel with ideal conditions, and by staging special events. Most importantly, the policy should recognize varying levels of inclination and tailor intervention appropriately.

2. Interpretation of contextual conditions as barriers to active travel

Research aiming to support active travel policy identifies a variety of factors associated with travel behaviors, but often focuses attention on the factors that serve as 'barriers' to active travel (Dellinger and Staunton., 2002; DiGuiseppi, 1998; Cole et al., 2010; Akar and Clifton, 2009; Schlossberg et al., 2006; Zhu and Lee, 2009). For example, Dellinger and Staunton (2002) analyzed results from the 1999 national Health Styles Survey, which asked whether students walked or biked to school and whether any of six specified conditions (i.e., traffic, crime, distance, weather, school policy, or other) made it difficult to do so. Of the six conditions, they found that long distances and dangerous motor-vehicle traffic were strongly associated with students who do not walk, and therefore interpreted the conditions as barriers to active school travel. Similarly, Zhu and Lee (2009) surveyed parents from schools in Austin, Texas and found several negative correlates to walking and biking such as distance, safety concerns, and the presence of highways, convenience stores, office buildings and bus stops *en route*.

When the research interprets factors as 'barriers' to active travel, it implies that people generally want to walk or bike, and it implies that they respond to undesirable route conditions by choosing to drive. In the case of school travel, it suggests that parents do not allow their children to walk or bike to school because they lack the opportunity to do so. For example, Dellinger and Staunton (2002) found that students without barriers were six times more likely to walk or bike to school. That conclusion has important implications for policy because it suggests that it may increase rates of active travel by addressing those barriers and making active travel possible.

In some cases, the research identifies both 'barriers' to and 'enablers' of active travel, which similarly implies that external factors either prohibit or assist people in achieving their personal goal of walking or biking (Davison et al., 2008; Pont et al., 2009; Sirard and Slater, 2008; Zhu and Lee, 2009). For example, Zhu and Lee (2009) found positive correlates to walking and biking to school, such as parents' and children's positive attitudes and regular walking behavior (for non-school trips), among other factors. In this case, the finding implies that the population studied felt a strong desire to walk.

However, in reviews of school travel literature, both Sirard and Slater (2008) and Pont et al. (2009) enumerated factors that the research associates with various school travel choices, and described them as either barriers or enablers of active travel to give a general sense of the ways that they influence trends for the populations studied. Because those reviews did not reveal what proportions of the various study groups typically choose to walk or drive in response to each type of factor (barrier or enabler), their interpretations seem to equate each factor exclusively with either active or non-active travel. Both reviews used tables to present the factors which emphasized the categorical distinctions (Pont et al., 2009; Sirard and Slater, 2008). That black and white interpretation of the research findings implies homogeneity in the population's values and responses.

The problem with this common interpretation of school travel research is that an important dimension of the findings is lost, making them too coarse for programs that aim to influence travel behavior with smaller groups. That is, how did the portion of respondents who chose to walk or ride bikes at least part of the time negotiate the conditions that were interpreted as barriers? This study expands the current research by examining how parents respond to barriers when they are encountered as part of the school journey.

3. Study methods

In order to provide a finer-grained analysis of travel behavior with smaller groups, this project applied a cross-sectional, qualitative analysis of parents' experiences of the school commute.

Data included transcripts of interviews that were conducted for a larger study of school travel in Denver Colorado.

3.1. Site selection

As a magnet for outdoor enthusiasts, Denver provided an appropriate setting to study parents' experiences with active travel modes for school trips. The climate and topography naturally accommodate active travel; however, its proportion of students walking or biking to school is similar to national levels and has experienced a steady decline in the past several decades (Gotthelf, 2007). To reverse that trend, the City of Denver is taking a leadership role in school-based active travel intervention. Political leaders have set progressive environmental goals for the city, including efforts to decrease automobile traffic and harmful greenhouse gas emissions (Conover et al., 2006). Denver's City Council signed Proclamation 15 in March 2007, creating a Safe Routes to School Coalition to develop a short- and long-term action plan and to support Safe Routes to School programs throughout the school district (Gotthelf, 2007).

We selected twelve public elementary schools as research sites for a larger study of school travel based on their participation in Denver's Safe Routes to School non-infrastructure programs during the 2007–2008 school year. Schools were located in a wide variety of Denver neighborhoods, differing in physical design, socio-economic status and other characteristics. The resulting selection included communities ranging in income, as well as schools with clear majorities of White, Hispanic and Black enrollment.

3.2. Participants

Participation in the larger research project and in the Safe Routes to School programs at each school provided access to key informants that included staff and parents from each school. In agreement with district-wide policy restricting the use of student contact information, we primarily recruited parents during drop off and pick up times at school entrances, visitor parking areas and on the streets where they waited in cars. The research team initially used a stratified sampling strategy to include respondents from each school's dominant racial and ethnic group(s), as indicated by published statistical records, and to emphasize male or female respondents at each school to reflect observed proportions among travel companions. Because mode split was not previously documented for participating schools, and to avoid implying that mode choice is absolute, we neither identified nor characterized respondents using that variable. However, findings indicated a combination of travel modes used within the population sampled, and may be described as representing viewpoints of pedestrians and drivers. To achieve the sampling objectives, the research team initially contacted 10 parents at each school. We conducted interviews during first contact when possible, and otherwise contacted them by telephone to organize a second meeting. That process resulted in 64 recorded interviews, a 53.3% return.

3.3. Data collection methods

Discussions with Safe Routes to School program facilitators and other key informants guided the development of the interview protocol. The protocol described the research as "a study of parents' experiences of the school commute", and included clusters of questions relating to four topics: (1) decisions about the trip to school, (2) companionship on the trip to school, (3) mode of travel on the trip to school, and (4) changing commuting behavior. Interviews lasted for an average of 15 min and were digitally recorded and transcribed.

Interviews approached the topic of school travel directly, but withheld discussion of active travel as a policy goal to avoid leading the respondents to answer a certain way. For example, interviewers asked parents what types of things influence decisions about the commute, and did not ask them to list obstacles that prevent active travel. That approach allowed parents to describe any issues they deemed relevant to the school commute regardless of their typical mode of travel. The open questions also allowed parents to explain their thought processes, rather than assuming that mode choices necessarily reflect the opportunity to walk or bike.

Questions about commuting decisions, companionship and travel mode provided insight into parents' travel behavior from their point of view. However, those questions implied typical behavior and might have obscured day-to-day variations. To clarify, interviewers encouraged respondents to describe trips that they made in the past three days including destination, distance, travel time and mode. The retrospective travel diary helped parents to focus on specific trips and to describe their responses to day-to-day conditions.

Questions about changing commuting behavior gave respondents the opportunity to speculate about conditions that might influence them to walk or bike more often than they currently do, and to consider their intentions, which might differ from their actual behaviors. That part of the interview introduced an active-travel policy objective in some cases, but did not present specific elements of intervention.

3.4. Analysis procedures

To examine parents' responses to key factors associated with mode choice for school travel, it was necessary to first identify the factors that could be used as possible a priori codes. Through a review of planning literature on the topic of active travel, the research team identified 75 unique factors associated with mode choice for school travel. Due to the large number of factors and large quantity of transcript text, we organized and analyzed the data electronically, using Nvivo 8.0 software. To facilitate a systematic approach to coding, we organized the factors into a framework that included three broad categories – physical environmental, socio-cultural, and personal. Lower level branches were occupied by specific factors (e.g., age of youngest child). Following the initial coding, we combined and eliminated some branches to reduce redundancy. Using a constant comparative technique, we examined the text in each category to identify concepts relevant to our initial research question, namely how parents addressed problems associated with the commute.

4. Findings

Results from this study suggest that parents' opportunities relating to the school commute not only depend on environmental conditions that allow active travel (real behavioral control), but also depend on parents' inclination and capacity to walk and thus, their perceived behavioral control. The role of perceived behavioral control is illustrated by two contrasting themes that emerged in the analysis: barrier elimination and barrier negotiation. Significantly, evidence from this study suggests that regular or habitual active travel may diminish perceptions of barriers (perceived behavioral control) so that negotiation becomes second nature. That transition suggests that experience may directly influence parents' capacity to use active travel, and therefore increase their opportunity.

4.1. Barrier elimination

Some statements suggested that barriers prevent parents from walking or biking, and that obstacle elimination would be necessary to make active travel possible. These statements fit four types, characterized by varying levels of inclination to engage in active travel.

4.1.1. First type – activism

In the first type, parents described opportunities to address hazards through organized surveillance, such as walking school buses or crossing guards. This type illustrates a gray area between negotiation and elimination, because by choosing to personally or collectively eliminate the barrier, the parents negotiate adverse conditions on a meta-level. In the following example, a parent describes an organized effort to improve pedestrian safety around the school.

> "I'm in a safety concern program for the school, and we're trying to come up with ideas to make it safer for our kids to get to school. [...] We're trying to get parent volunteers to stand at each of the corners of the schools and monitor the traffic and other students that come to the campus" (ED8).

Her participation in that ad hoc program indicates a degree of inclination to walk or bike – at least for the parents choosing to organize the intervention. That process has important policy implications because it means that families who are inclined to walk or bike may also be inclined to influence other families' mode choices, thus magnifying the effects of formal intervention.

4.1.2. Second type – resistant speculation

In the second type, parents considered how they might need to change their behavior to be able to walk or bike, but presented each option without conviction or alternatively with an explanation of why it would fail. For example, one parent stated,

> "I would need to wake up extra early to drop her off walking and then either way I have to grab my car because I can't go walking to school because it's a long way. And I can't ride the RTD because it is so time consuming and out of the way, because my daughter enters at 7:45 and I have to be at school at 9:00 so I can't" (SM3).

This parent's defensive response indicates her awareness of active travel alternatives minus the capacity to comfortably accomplish them.

In some cases, parents described their children's heavy backpacks as insurmountable obstacles. For example, one parent stated "his backpack weighs 100 lbs! If anything were to allow them to change their commute to school this would have to change" (CO11). This parent did not discuss ways to decrease the load or otherwise negotiate the barrier in order to walk or bike. Similar to the speculations without conviction, this type of statement indicated that the families recognized active travel alternatives, but lacked capacity.

Other families consciously chose to send their children to schools outside of their neighborhoods, making distance a barrier to active travel. For example, one parent stated, "if they went to the school that is closer to our neighborhood, they could bike to that school or they could walk. But they don't go to that school right now because that school has a very low academic score" (BR8). This type of comment indicated that the families prioritize academics and recognize the limiting impact that their decision has on travel alternatives.

4.1.3. Third type – miracle seeking

In the third type, parents stated conditions beyond immediate reach or desirability, such as "if I quit my job" (SL3) or "if they had an overpass" (CO19) or "if that school was on this side of Colorado Boulevard" (CO19) or "when the kindergartener is in 3rd grade" (SL3). In some cases, they stated extreme conditions facetiously, such as "they would need an armed escort" (BR8). This type of statement indicates low inclination to attempt a mode change to active travel and suggests that intervention should address inclination first rather than attempting to meet demands for environmental changes.

4.1.4. Fourth type – car dependence

In the fourth type, parents described complex ways that they use driving to negotiate challenging schedules of school and extracurricular activities for multiple children. These statements suggest that the families' inclination to use active travel modes is very low because it is incompatible with lifestyle choices. This condition has important implications for policy because it represents a socially constructed dependence on private car travel.

In one example, a parent described the driving commute for two children to two schools as an obstacle that dictates the family schedule. She says, "It's hard, but we've managed it so far" (AN1), indicating that they've found a system for negotiating their travel time barrier. In contrast to barriers that prevent active travel, she described a barrier to being able to get the kids to and from their schools at all. In this case, the family had to adjust to a new school that lacked an after school program.

Similarly, another parent described a complex carpooling arrangement that includes multiple schools and changes each day depending on extracurricular activities. Although the plan required each parent to drive several legs of the trips each day, it reduced the overall amount of driving for each family (ST11). In this example, the families have negotiated time barriers that might have prevented certain activities. However, they have not considered negotiating barriers to active travel through radical lifestyle changes.

Although parents' comments often explicitly described expectations of barrier elimination, these examples suggest that the attitudes that they represent might be more effectively addressed through capacity building at family and community levels.

4.2. Barrier negotiation

In contrast with the first examples, some statements suggest that parents are able to negotiate undesirable conditions, challenging the black and white interpretation of factors. Statements relating to this theme fit into three types relating to when and how the conflict was perceived. The attitudes expressed by these statements also reflect stages of behavioral change, which may be magnified through targeted intervention (Prochaska et al., 1994).

4.2.1. Variable travel choices

The clearest evidence that parents find ways to negotiate barriers is that their travel behaviors are not constant. For example, some parents allowed their children to walk or bike by themselves "on occasion" (SL9) or "a few times, like once or twice" (SM7) or "every once in a while... if he begs" (SL3).

Some statements described regular patterns of variable behavior. For example, one parent said "I take three kids in the morning. I go back around noon to pick the youngest up, and in the afternoon I will sometimes go again to pick up the other two, but they usually walk home with friends and I meet them two blocks away" (ED8).

Parents often recalled unique walking events that were outside their normal routine. For example, one parent stated "It's a pretty good distance, but we've walked before. We walked last year. We had to walk to school day or something like that. But yeah, it would take us a good minute to walk there" (PH2)

The variability of travel behaviors has important implications for policy because it indicates both a degree of inclination to engage in active travel and a capacity to do so. Families that have participated in walk to school days or other active travel events know that they can walk because they did it previously. By encouraging families to gain experience, intervention can help to build that capacity.

4.2.2. Planning ahead

Some parents considered how they might negotiate certain barriers and concluded that it would require planning ahead or organizing resources. In contrast to examples in Sections 4.1.2 and 4.1.3, these statements suggest a higher level of inclination to engage in active travel. In the following cases, planning ahead served to address relatively simple problems.

> "I would probably either walk with him [...] to at least get him across a couple of streets I don't consider safe" (CO9).

> "If I were in the middle of something, I would have to stop and go get him, bring him home." (SL6).

> "I don't think that in elementary school I would have them walk by themselves... a group though... we have enough kids over by where I am" (ED0).

> "I've already made a plan to take the bike. She's got a new bike and you know I pick her up from work every day... we are going to ride bikes to work every day, and then I have got a basket that I'm going to put on my bike so I can mount her bike in so that I can get it home at night. So we are going to start riding" (ED0).

> "There's a little bit involved. There's a bit that goes into it. It's not just throwing on a sweater and driving them to school. They have to prepare for what they are doing and wear the proper shoes or boots for the weather" (ED3)

To encourage active travel with this group, intervention can enhance parents' capacity to plan for active travel by identifying safer routes, and preparing students and their families to handle adverse conditions.

In addition to the simple fixes, some statements described plans to make significant life changes in order to facilitate active travel. For example, a few parents described trips in which they negotiated distance as a barrier. Some considered the possibility of moving closer to the school as a way of negotiating the long commuting distance and associated fuel costs (SL7). Others suggested that children should negotiate difficult distances. One parent said, "five miles is quite a ways to walk to school, but I can see where that would be a good thing for a kid because it takes a little struggle, and struggle is good" (AN3).

4.2.3. Impromptu changes

Some statements suggested that parents have a latent capacity to negotiate barriers if occasion demands or if they feel so inclined. For example, one parent stated "Once, I was late and I dropped her off and let her run inside. I was completely paranoid; I parked and walked to her school and walked inside to her class to make sure she was there. It really freaked me out" (CO6). In response to fear, this parent negotiated a time obstacle by changing priorities. Although this scenario did not result in active travel behavior, it has important policy implications because it suggests that opportunity is relative rather than absolute. Another parent described a central role of inclination in overcoming barriers to active travel. He stated "It's just something I have to want to do in my life" (ED1).

Numerous statements described parents responding to barriers by aborting active travel plans in favor of driving. The following examples include driving in response to oversleeping, school projects, and adverse weather conditions:

> "If he's overslept I'll drop him off to make sure he gets there on time. If it was really cold out, I would drive him as well" (AN2).

> "Sometimes if I had to be at school or if he had a project or poster to carry I would drive him" (AN5).

> "We only drive when the weather is real bad, like when it snows more than a couple inches or when it's really cold. When it's nice out we walk, which is most of the time, but when it isn't I give her a ride" (AN12).

> "If it is cold or a lot of snow has fallen the night before I will give her a ride. She usually decides what weather she is willing to walk in. If it is nicer outside she usually walks and if I am late to work I will often drop her off a little farther than the front entrance even when it is not nice out because traffic in that area can get hectic in the morning" (ED5).

The tendency to drive as a backup plan has important implications for policy because the backup plan can easily become the norm if adverse conditions occur regularly. Thus it is important for active travel programs to encourage families to negotiate barriers rather than associating active travel with ideal conditions.

4.2.4. Habitual – negotiating hazards en route

Some statements that identified hazards also indicated occasions in which parents negotiated the problems en route. For example, several parents explain how they manage to cross busy streets that do not have official crossing guards.

> "No, there aren't [guards]. That's one of the reasons why it takes so long. We have to wait at the corner one block from the house because it's really busy, especially in the afternoon" (ED8).

> "Sometimes, you have to make sure that all of the cars come to a stop because some whip through. And then it's such a quick light. They are running across with their bikes and you have to make sure they stop, which takes a few seconds, and then the hand starts flashing. I think a lot of people on that side are concerned about that. I know that other people won't walk" (SL8).

Parents' capacity to negotiate barriers en route has important implications for policy. First and foremost, it indicates that these barriers are penetrable. Secondly, it illustrates the significance of inclination (and real versus perceived behavioral control) in travel choices, since other parents presented the same safety hazards as the reasons that they choose to drive.

4.3. Perceptions of barriers diminished with regular active travel

There is a blurred distinction between perceptions of negotiated barriers and perceptions of no barriers for families that regularly walk or ride bikes to school. The idea that perceptions of barriers diminished with regular active travel emerged in the analysis as a separate theme. In the following examples, parents who currently use active travel modes speculate about how they would negotiate barriers if they were encountered.

Some parents indicated that they were aware of potential barriers to active travel that do not currently affect their travel choices, but do affect families that live in other parts of the neighborhood. For example, one parent said "She walks with a friend who lives across the street. We do not live far and there are no major roads between our house and the school" (ED5). This type of comment suggests that the family might alter their travel behavior if confronted with barriers. Although they currently use active travel and do not perceive any adverse conditions, they may not be deeply committed to active travel.

Other parents recognized potential barriers, but indicated how they would approach them if necessary. In the following example, a parent recognizes that negotiating certain barriers would require additional planning.

> "If we lived more than a few miles from school I would probably think about driving him to school, or he could take the bus maybe. If he had to cross any major intersections I would think a little more about the trip, for safety concerns. Other than that though, I see no reason why more children can't make the trip themselves" (ED6).

That type of statement indicates a higher degree of inclination and commitment to active travel, which could be nurtured through intervention.

In some cases, parents described their response to adverse conditions that sometimes occur during their active commute to school. The following comments suggest that the families are committed to their active travel behavior and are prepared to negotiate conditions as they arise.

> "The walk takes about 8–10 minutes, sometimes a little longer [...]. When it snows or when we have to wait for traffic it may take a little longer" (AN12).

> "It gives people exercise when they're able to get out and walk to school, or would have walked the kids to school every day or whatever. Even if it's, you know, snowy or whatever, we'll still go for a walk every day. So that's good." (CO3).

> "Even if they were going to close the school (for weather) I would send them walking because they need the exercise" (LO5).

> "Even if it is snowing buckets we make them walk, ha ha, even in a blizzard they walk. It isn't a big deal" (SL4).

Although many of the families in these examples use active travel modes regularly, it is important for intervention to assess levels of inclination and commitment and to secure each family's capacity to negotiate barriers when they are encountered.

5. Discussion and conclusions

This study investigates how parents negotiate barriers when they walk or bike their children to school. The research team examined transcripts of 65 interviews conducted with parents for a larger study of school travel to re-contextualize factors commonly identified as 'barriers' to active travel. Two contrasting themes emerged from the analysis – barrier elimination and barrier negotiation – demonstrating a unique relationship between key behavioral choice-theory concepts of real and perceived behavioral control. That relationship merits further investigation. The distinction between the two themes has important implications for active travel policy, which has the potential to emphasize one or the other attitude.

Barrier elimination implies that someone or something (i.e., the school district, the local authorities, the department of transportation, etc.) must make conditions ideal to allow travelers to walk or bike. In many cases, parents explained and excused their mode choices in terms of barriers that prevented active alternatives. Those explanations fit four broad attitudinal categories (Activism, Resistent Speculation, Miracle-Seeking, and Auto-Dependence), and indicated varying levels of inclination to engage in active travel.

Policy that aims to create pedestrian-friendly environments inevitably emphasizes barrier elimination by making improvements to urban form as a prerequisite to walking or biking. That approach is supported by research that suggests that elements of urban design indirectly influence parents' mode choices for their children's school trips. However, the impact of urban form is mediated by the ways that it influences objective and perceived traffic and neighborhood safety (McMillan, 2005). Thus, policy may also influence mode choices by addressing those perceptions, even if physical conditions remain unchanged.

Policy may also emphasize barrier elimination by focusing attention on safety issues. Research in the U.K. has found that certain pedestrian safety campaigns have even diminished independent mobility by heightening awareness of hazards and discouraging active travel (Hillman et al., 1990). Programs such as Safe Routes to School may have a similar effect on perceptions of pedestrian safety if they survey parents in order to identify hazards along travel routes. Active travel programs should be careful not to condition families to associate active travel with ideal conditions because those conditions are so easily interrupted by weather, traffic patterns, neighborhood demographics and other factors. Instead, they should build families' capacity to negotiate those conditions when they are encountered.

In contrast, barrier negotiation implies that given some undesirable conditions, travelers can still find ways to walk or bike. Parents often explained how they negotiated barriers when they encountered them, but also considered how they could plan for them in advance. Those explanations fit three broad attitudinal categories based on how and when they perceived the barriers, and also on their stage of behavioral change. These statements also indicated varying levels of inclination to engage in active travel.

Travelers cannot passively wait for barrier negotiation to occur before they choose their travel mode. It requires a conscious effort, and therefore a stronger inclination to walk or bike. The role of policy in that case should be to increase parents' capacity to walk or bike children to school, and to encourage them to carefully negotiate adverse conditions with proper equipment and behavior rather than driving as a convenient backup plan. International Walk to School Day and other planned active travel events may serve this purpose well because they encourage families to plan ahead for a temporary mode change – thus increasing experience, and because they build the families' capacity to address undesirable conditions along the way. Walking School Bus (WSB) programs might similarly help to build children's capacity to walk to school. By piquing parents' interest in the social activity even temporarily, they can help families to develop shared experience dealing with traffic conditions, and prepare children to walk alone or with friends (Kingham and Ussher, 2005). Again, planning ahead for a temporary mode change can result in expanded capacity for active travel.

Most important is that policy-makers must recognize the diversity of parents' attitudes. It should not be assumed that all parents share a desire to walk or bike to school and that they lack the opportunity to do so. Instead, intervention should be tailored to varying levels of inclination, experience and capacity to magnify its impact on individual travelers' behaviors, and ultimately on rates of active travel.

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