Are Parents Treading Water When it Comes to Awareness of Children’s Drowning Risk? The Impact of Children’s Swimming Lessons on Parents’ Perceptions of Children’s Drowning Risk, Swimming Ability, and Supervision Needs Around Outdoor Water

by

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ABSTRACT

ARE PARENTS TREADING WATER WHEN IT COMES TO AWARENESS OF CHILDREN’S DROWNING RISK? THE IMPACT OF CHILDREN’S SWIMMING LESSONS ON PARENTS’ PERCEPTIONS OF CHILDREN’S DROWNING RISK, SWIMMING ABILITY, AND SUPERVISION NEEDS AROUND OUTDOOR WATER

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Having the same parents repeatedly complete questionnaires over time, the current community based study investigated beliefs relevant to supervision, drowning risk, and water safety for children aged two through five enrolled in swim lessons. Results revealed that many parents value swimming lessons for young children and view supervision as an important prevention approach. Water safety beliefs and accuracy in judging children’s swim abilities improved over lessons, but time in lessons was related to endorsing poorer supervision of children near water. Having experienced a “close call” for drowning was found to make parents more aware of drowning risk and the importance of close supervision. Results highlight the need for parent education that targets beliefs about water safety and supervision during lessons, and also suggest that a close call for drowning may act as a “teachable moment” for parents and be an appropriate time to implement such interventions.
Acknowledgements

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And because it is not just children around water who need supervision -- to my supervisor, Barb. Thank you for teaching me and always supporting me.
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The Impact of Children’s Swimming Lessons on Parents’ Perceptions of Children’s Drowning Risk, Swimming Ability, and Supervision Needs Around Outdoor Water

Burden of Drowning

Drowning is a leading cause of death and disability for children. Worldwide, drowning has resulted in a higher rate of mortality than any other cause of injury in children under the age of 15 (Peden & McGee, 2003), with the highest drowning mortality rates being in children under the age of five (World Health Organization, 2003). In Canada, the one to four age group is at particular risk, with the second highest drowning rates occurring amongst toddlers of these ages (Canadian Red Cross, 2003). Between 1991 and 2000, there were 729 drownings amongst Canadian children aged 0-14 years, with 368 of these occurring in those aged one to four years (Canadian Red Cross, 2003). Consistent with this, many studies have reported that the highest rates of drowning deaths occur in children under age four (Brenner, Trumble, Smith, Kessler, & Overpeck, 2001; Quan & Cummings, 2003; Browne, Lewis-Michl, & Stark, 2003) and most drownings in this age group have been found to be a result of falling into the water (Quan & Cummings, 2003; Browne, Lewis-Michl, & Stark, 2003).

Near drownings can also result in severe neurological deficits (Kemp & Sibert, 1992), with worse outcomes for those with longer submersion times (Suominen et al., 2010). In Canada, children aged zero to four have the highest rates of hospitalization for near drownings (Canadian Red Cross, 2003). Fortunately, improvements have been seen in drowning rates over time in Canada (Canadian Red Cross, 2006; International Lifesaving Federation (ILS), 2007), with the greatest improvements in children under the age of five (Canadian Red Cross, 2006). This pattern of reduced drowning incidents in children of this age group has also been seen in other
developed countries including the United States and Australia (ILS, 2007). However, drowning still remains a serious child health threat, with there being about five times as many drowning fatalities as near drownings in toddlers, and over two and a half times as many in infants (Canadian Red Cross, 2003).

*Risk Factors*

**Location.**

Drowning incidents can vary greatly by location. In Canada, the most common drowning sites are lakes, rivers, oceans, bathtubs, and swimming pools (Canadian Red Cross, 2003). Worldwide, natural bodies of water including lakes, oceans, rivers, ponds, and creeks are the most common drowning sites, and many developed countries also report pools as a common drowning site amongst young children (ILS, 2007). Consistent with international data, a study by Brenner and colleagues (2001) investigating death certificates of children aged 0 to 19 who had experienced unintentional drownings revealed that the majority of these occurred in still freshwater (e.g., rivers/creeks, lakes, and ponds), followed by pools. This study also found that drowning sites vary by age. Infants (under age one) were most likely to drown in the home, children aged one to four were most likely to drown in pools, and after the age of five, freshwater was the most common drowning site (Brenner et al., 2001).

**Sex and Race.**

Sex and race are also factors that can affect drowning risk. Beyond one year of age, males are at a greater risk for drowning compared with females (Brenner and the Committee on Injury, Violence, and Poison Prevention, 2003; Brenner et al., 2001). In a study of the characteristics of drowning victims over a 15-year period, Quan and Cummings (2003) found that most drowning victims across all ages were male. The impact of race on drowning risk can be affected by
factors including age and sex. Brenner and colleagues (2001) found that drowning deaths in children aged 0 to 19 were more common in white populations but that after the age of ten, black males may be at more than ten times greater risk of drowning than white males. First Nations and Inuit Canadians have also been shown to have drowning rates up to ten times greater than average Canadians, with Aboriginal children aged one to four being a particularly high risk group (Canadian Red Cross, 2003). Differential drowning rates among ethnic and racial groups may be due to having more exposure to water situations as well as water hazards (Canadian Red Cross, 2003), and it is also possible that higher drowning rates in immigrant or minority groups could be a result of fewer opportunities to learn to swim. A study commissioned by the Lifesaving Society found that new immigrants to Canada, notably those who had lived in Canada for fewer than five years, were less likely to have learned to swim through formal lessons and were over four times more likely to report that they are not able to swim compared with those born in Canada (Lifesaving Society, 2010).

Prevention Approaches.

Given the burden and scope of childhood drowning deaths and near drowning unintentional injuries, there has been much research aimed at prevention. Four sided fences that isolate pools have been shown to be especially effective in reducing the risk of drowning in young children (Thompson & Rivara, 1998), but compliance with standards can be low (Morrison, Chalmers, Langley, Alsop, & McBean, 1999) and parents with home pools often do not have the isolation fencing and self closing and self latching gates that are mandated by law (Cody, Quraishi, Dastur, & Mickalide, 2004). Many young children who drown in residential pools have accessed the pool as a result of open or unlocked gates, ineffective gate latches, no fences or fences in poor condition, or ladders left down (Browne, Lewis-Michl, & Stark, 2003). While
environmental modifications may be efficacious if used correctly, they often are not. Therefore, more active approaches are also necessary. Constant adult supervision, for example, is recommended to prevent against drowning (Committee on Sports Medicine and Fitness and Committee on Injury and Poison Prevention, 2000; Brenner and the Committee on Injury, Violence, and Poison Prevention, 2003).

Caregiver Supervision.

Evidence suggests that parents are aware of children’s drowning risk and the need for supervision around water. Compared to other common child-injury types, drowning is perceived by parents as being particularly severe and they may engage in more safety practices compared to other types of injuries to prevent drownings (Morrowiello & Kiriakou, 2004). Parents and caregivers have been found to recognize that staying close and watching their child constantly are the most important components of supervising in order to prevent drowning (Petrass, Blitvich, & Finch, 2011). Many also believe that they are the best supervisors and that they provide close (Moran, 2009) and adequate supervision of their young children at the beach (Moran, 2010). Despite these perceptions, however, the majority of evidence suggests that supervision practices are often insufficient and inadequate when children are near water.

Many children who drown or experience near drowning incidences are unsupervised at the time (Kemp & Sibert, 1992). A study of swimming victims conducted by the Canadian Red Cross (2003) found that nearly half of those aged five to 14 were unaccompanied by an adult at the time they drowned, and Quan and Cummings (2003) found that only 12% of children aged zero to four were witnessed when they drowned. Surprisingly, however, drowning deaths in preschool aged children have also been found to occur in children who are in the care of one or both parents (Blum & Shield, 2000) and nonfatal drowning incidents have been reported when
children are presumably being supervised by caregivers (Ma et al., 2010). Indeed, a national study of childhood drowning in the United States revealed that 88% of children were presumably being supervised at the time when they drowned, with 46% having a parent as their primary supervisor (Cody et al., 2004). While it seems contradictory for drownings to occur while children are being supervised, it is inadequate supervision (measured by both quality of supervision and the proximity of the adult) that is most commonly associated with submersions (Quan, Gore, Wentz, Allen, & Novack, 1989). A ten year drowning study conducted by the Canadian Red Cross (2006) found that 80% of those who drowned in bathtubs were either alone at the time or with only a minor. Browne, Lewis-Michl, and Stark (2003) found that the majority of children aged zero to four who drowned had a companion on site but this person was not within view. Hence, many drownings amongst young children occur when caregivers are present but supervision is inadequate or inappropriate.

While most parents report that they always exercise active supervision while their child is swimming, they also report that they engage in other behaviours that distract their attention from supervision, including talking to other people, reading, eating, and talking on the phone (Cody et al., 2004). Similarly, some drowning deaths have also been found to occur when supervision is interrupted temporarily by house or yard work, answering the phone, or engaging in social activities (Blum & Shield, 2000). Of particular concern is that child drownings can happen when the supervisor has the child out of their view for a very short period of time. Browne, Lewis-Michl, and Stark (2003) investigated the amount of time between when children aged zero to four drowned in residential pools and when the supervisor last saw the child, and they found that nearly half (43%) of these drownings occurred when the child was reportedly out of view for five minutes or less. Therefore, while parents may believe that they are supervising their children
around water, they are often engaging in behaviours that take away from their ability to effectively attend and drownings can occur even during short lapses in attention (supervision).


Despite the severity and prevalence of child injuries, many parents have misguided notions about their scope, and this can negatively impact their supervisory behaviours. Many parents perceive injury to be a natural part of childhood, do not realize the degree of severity of childhood injuries, and think that injuries provide an opportunity for children to learn about the consequences of risky behavior (Morrongiello & Dayler, 1996). Importantly, parents’ perceptions of their child’s risk influences how carefully they supervise a child in a potentially risky situation (Morrongiello, Corbett, McCourt, & Johnson, 2006; Morrongiello & Kiarakou, 2004; Morrongiello, Ondejko & Littlejohn, 2004a, b). Specifically, parents have been shown to hold mistaken perceptions of children’s drowning risk. While they may understand that a lack of constant caregiver supervision is a risk factor for drowning and even display knowledge of preventive measures, they may not see children aged one to four as a high risk group and, as such, be unlikely to apply prevention strategies amongst this age group (Rahman, Shafinaz, Linnan, & Rahman, 2008). A study by Moran (2009) revealed that parent and caregiver supervisory practices for young children may be inadequate around beaches. Though most caregivers with children under the age of five said that when their child is in the water they would stay close to them and be in the water with them, nearly a quarter said that they would only watch from the beach. Of particular concern is that 64% of caregivers with children under the age of five rated their child as a weak or non-swimmer. Similar supervision practices have been found amongst parents with children aged five to nine in the beach context. Petrass, Blitvich, and Finch (2011) found that over 50% of caregivers reported that they would directly
watch their child instead of staying close to them in the water, and Moran (2010) found that nearly one quarter of parents were not supervising adequately to prevent drowning, which was defined as “close and constant attention to the water safety of young children without distraction” (pp. 272). Further, parents have been shown to not worry much about their children drowning and to even believe that there are some situations in which children do not require adult supervision, including if the child is a skilled swimmer and has had years of swimming lesson experience (Cody et al., 2004).

Swimming Lessons and Drowning Risk.

How swimming lessons influence children’s actual drowning risk has been a topic of particular interest and some debate in the literature. Generally, evidence seems to favour the view that swimming ability may have some protective function against drowning (Brenner, Saluja, & Smith, 2003). For example, a national study of drowning victims in the U.S. found that most (74%) did not know how to swim (Cody et al., 2004). Similarly, the Canadian Red Cross (2003) found that over one third of those aged five to 14 who drowned did not know how to swim or had weak swimming ability. Interestingly, while poor swimming skill has been associated with an increased risk for non-fatal drowning incidents, better swimming ability has also been found to be related to more water-related risk behaviours (Ma et al., 2010), which could translate into greater drowning risk and supports the view that swimming instruction can increase drowning risk by encouraging overconfidence in the water (Smith, 1995).

The American Academy of Pediatrics (AAP) once held the view that children were “generally not developmentally ready for formal swimming lessons until after their fourth birthday” (Committee on Sports Medicine and Fitness and Committee on Injury and Poison Prevention, 2000, pp. 869). This perspective was based on several factors, including: lack of
evidence about how swimming lessons can affect drowning risk, existing evidence by Parker and Blanksby (1997) demonstrating that beginning lessons at an early age did not lead to developing swim skills earlier, and concern that swimming lessons could instill a false sense of security in parents and negatively affect their supervision practices (Committee on Injury, Violence, and Poison Prevention, 2010). However, this advisory was not without criticism. Langendorfer, Quan, Pia, Fielding, Wernicki, and Markenson (2009) point out that “developmental readiness” was not defined, that this stance failed to appreciate individual differences amongst children in their propensity to learn to swim, and because skill level is arguably a more appropriate marker in determining whether children are ready to learn to swim than age alone. Compelling evidence for the protective role of swim ability and lessons comes from a case-control study conducted amongst children by Brenner and her colleagues (Brenner et al., 2009). Results revealed that case children (those who had died from drowning) aged one to four were not as skilled swimmers, and that taking part in formal swimming lessons was actually related to an 88% reduction in drowning risk (Brenner et al., 2009). Given this recent evidence, the AAP has since revised its stance and does not offer a minimum age for learning to swim or argue against lessons for young children (Committee on Injury, Violence, and Poison Prevention, 2010).

An important area of investigation, but one that has received less attention in past research, is the impact of swimming lessons on parents’ perceptions of drowning risk. A recent study conducted in Toronto, Canada, on attitudes and behaviours about water safety revealed that most people believed that learning to swim is a vital skill (Lifesaving Society, 2010). Of particular concern, however, is that many parents may actually have misguided and overly optimistic views regarding the impact of swimming lessons on drowning prevention in children (Moran & Stanley, 2006a). Moran and Stanley (2006a) found that more than half of the parents in their
study thought that swimming lessons were the best way to prevent drowning in toddlers. Compared with parents whose children were not enrolled in swim lessons, more parents with children in lessons actually thought that toddlers could “learn to save themselves if they fell into the water” (pp. 141). Further, about one third of all parents (regardless of whether their child was enrolled in swim lessons) believed that swimming ability in toddlers was a better approach to prevent drowning than relying on adult supervision. This is quite alarming given the importance of supervision for preventing drowning in young children.

The Current Study

Much is known about parents’ perceptions of injury and drowning risk, how this might affect their supervision practices, and the impact of swim lessons on children’s actual risk for drowning. An area that has not been explored, however, is whether parents’ perceptions of drowning risk and their beliefs relevant to children’s safety around water and need for supervision change over time as their child accumulates experience in swim lessons, and how this might differ across swim organizations. The current study explores five specific questions: (1) how parents view the value of swimming lessons; (2) whether parental beliefs (i.e., about their child’s ability to keep themselves from drowning, their need to supervise closely to prevent drowning, perceptions of drowning) change in systematic ways as their child learns to swim; (3) how swim lessons might influence parents’ perceptions of their child’s current swim ability and how this compares with the child’s actual abilities (as reported by their swim instructor); (4) whether parental involvement in their child’s progress through swim lessons impacts their beliefs regarding swim safety; and (5) whether parents’ swim ability and experiencing a “close call” for drowning are related to their beliefs about supervision and water safety.
Parent beliefs about swimming lessons will be assessed through questionnaire measures (question 1). Questionnaires will be completed by parents at two time points as their child progresses through swim lessons, once at the beginning and again towards the end of their child's sequence of swim lessons (question 2). At these same time points, children’s swim instructors will be asked to report on the child’s actual swim ability (question 3). Further, parents’ perceptions will be compared across two different swim schools. These schools have very similar swim curricula, but one uniquely includes a component where parents are given a sheet highlighting the child’s progress in swim ability. This sheet focuses explicitly on children’s development in swim skill and keeping the parent informed of this. It is possible that differences in program scope might affect perceptions of drowning, and comparing results across swim schools will be important in determining whether providing parents with feedback on their child’s swim progress has an effect on beliefs about their child’s ability and perceptions of drowning (question 4). To address question 5, parents will answer questions about their own swim abilities and near drowning experiences.

Findings from this study will aid in identifying the nature of the influence that swim lessons have on parents and, indirectly, on children’s risk of drowning. This could lead to changes in curriculum scope or implementation, and provide direction for campaigns and intervention programmes that aim to prevent drowning by raising parental awareness of the issue. Findings may also provide insight into parent beliefs that could be targeted by informal training programs that take place in combination with children’s swim lessons. Such interventions have been found to positively influence parents’ attitudes about water safety and supervision beliefs, as well as their beliefs about the relation between swim ability and swimming lessons (Moran & Stanley, 2006b).
Method

Participants

Participants included mothers and fathers of children aged two through five who were enrolled in swimming lessons at the YMCA-YWCA of Guelph and the City of Guelph Parks and Recreation Department. The parent who attended lessons or was most familiar with their child’s swim ability was asked to participate in this study.

Materials

Parents completed a consent form (see Appendix A), demographic survey, and three questionnaires assessing their beliefs about water safety, their personality characteristics, and views about parenting at the beginning of their child’s sequence of swim lessons (within the first two weeks approximately). Towards the end of the child’s swim lessons (within the last two weeks), re-consent was obtained (see Appendix B) and the questionnaire about water safety was repeated again. Parents had the option of completing these questionnaires online or on paper copies. At the same two time points that parents completed questionnaires, the swim instructors independently completed a checklist to rate each child’s swim ability; this measure consisted of a selection of items that were the same as what the parent completed (see Swim Instructor Checklist section under Method) so that responses on the two could be compared. Figure 1 provides information on the measures administered to parents and instructors at Time 1 and Time 2, as well as the timing that these measures were administered.

Time 1.

Demographic Questionnaire.

The demographic questionnaire assessed a variety of child and family characteristics, including: which parent (mother or father) completed the questionnaires, child’s age and sex,
child’s swim class information, child’s past exposure to swimming lessons, number of siblings and each one’s swim ability, family routines, ethnicity, parent’s education, household income, parent’s experience with safety or parenting courses, and whether the household consisted of one or two parents (see Appendix C).

Parental Attributes and Beliefs.

Two questionnaires were administered to parents to gather information about: (1) the personality characteristics of Conscientiousness and Neuroticism [subscales of the Big Five Inventory (BFI)], and (2) parents’ beliefs regarding the parenting style of permissiveness [subscale of the Parental Authority Questionnaire – Revised (PAQ-R)].

Time 1 and Time 2.

Parent Opinions About Water Safety (POAWS) Questionnaire.

Twenty parents with children enrolled in swimming lessons completed the preliminary version of the POAWS questionnaire in Pelham and Alabama, USA, as a pilot test. Based on parent feedback, the questionnaire was revised for wording, though a minimal amount of changes were required. The POAWS questionnaire (see Appendix D) assesses several areas related to parent’s perceptions of water safety and children’s risk for drowning, including: access to outdoor water situations, child’s informal experience with learning to swim, parent’s swim ability, experience with “close calls” for drowning, perceptions of drowning prevention, views about children’s readiness for swim lessons and water safety education, beliefs about the value of swimming lessons, children’s swim ability, children’s supervisory needs around outdoor water situations, as well as their risk taking propensity, predictability, compliance, and inhibitory control.
Swim Instructor Checklist.

The swim instructor checklist items correspond exactly to questions 1 – 24 (excluding question 17) in section 10 of the POAWS questionnaire (see Appendices E and F). Instructors were asked to indicate “yes” or “no” to a variety of items about the child’s current swim ability. These skills were selected because they are explicitly taught by swim instructors to children aged two through five during lessons, which allowed for direct comparison of what the parent believes their child is able to do relative to what the child is actually able to do. Therefore, instructor reports were compared with parents’ perceptions of children’s swim ability, which provided insight into whether parents are accurate judges of this.

Procedure

After obtaining approval from the University of Guelph Research Ethics Board, the aquatics directors at swim schools across Guelph (YMCA-YWCA of Guelph, and City of Guelph Parks and Recreation Department, referred to herein as “YMCA” and “Parks and Rec” for simplicity) were then contacted by the researchers and invited to participate in this study. An invitation letter explaining the proposed project was sent to them, and a meeting was then arranged to discuss the project. Both organizations agreed to participate with their swim classes at four different pools (one YMCA pool, and three Parks and Rec Pools). Extensive consultation was then done with the aquatics directors to determine recruitment procedures and finalize some questionnaire items (e.g., Section 10 of the POAWS questionnaire requires parents to judge their child’s swim ability, and the aquatics directors advised on these items to ensure that they would be applicable to the swim experience of children at both schools).

Parents of children aged two through five whose child was enrolled in swimming lessons at these four pools were invited to participate. Multiple recruitment procedures were used,
including mailing an information letter to parents before the first class \(N = 1200\); see Appendix G) and handing out letters to parents during the first few classes \(N = 240\), see Appendix H for YMCA letter; \(N = 310\), see Appendix G for Parks and Rec letter).

**Time 1.**

Parks and Rec parents were asked to complete the questionnaires anytime before their child’s third lesson, and YMCA parents were asked to complete these anytime before their child’s fourth lesson (timing differed across sites because of other programming taking place at the YMCA during lesson one). Parents completed the questionnaires either online or on paper (i.e., onsite during their child’s lesson or to take these home and return them the following class). Approximately 260 questionnaires were handed out to those at Parks and Rec, and 65 at YMCA. Parents first completed a consent form, followed by a demographic survey and questionnaire about swim safety, and then two randomly ordered questionnaires about personality characteristics and parenting. These took about 30 minutes to complete.

In the same time frame, swim instructors completed the checklist rating the child’s swim ability. These checklist items correspond exactly to many of those that parents also answered about their child’s swim ability on the questionnaire about water safety (see Data Coding and Measures Taken section under Method for a listing of the specific items that corresponded). Prior to the start of lessons at Parks and Rec, a research assistant attended swim instructor training sessions to explain how to complete these checklists. She also explained this to the aquatics supervisors at each site and provided them with her contact information in the event that questions arose. Attending training sessions was not an available option at the YMCA, but a research assistant explained this to the YMCA aquatics director who conveyed this to all instructors.
Time 2.

Just before their child’s second to last lesson, parents were contacted by phone or email and asked to complete the questionnaire about water safety again. They were asked to do this after their child’s second to last lesson, but before the last lesson. A re-consent form was completed, and the questionnaire could be completed online or by hand (onsite during their child’s second to last lesson, or taken home and returned at the last lesson). Parents received a five-dollar gift card for their participation.

After the second to last lesson and before the last lesson, instructors were once again asked to complete the same checklist rating each child’s swim ability. Swim instructors received monetary compensation or a gift card of equal value.

Data Coding and Measures Taken.

For question 5 of the POAWS questionnaire (Appendix D) (“what is the single best way to prevent drowning in outside water situations”), parents’ responses were coded along three dimensions: (1) teaching (i.e., to swim, about water safety, and about becoming comfortable in the water), (2) supervision, and (3) preventing access/passive prevention (i.e., lifejackets). If parents provided more than one drowning prevention strategy, their first two responses were coded along dimensions that reflected multiple responses: teaching and preventing access/passive prevention, teaching and supervision, or supervision and preventing access/passive prevention.

The Water Safety Beliefs scale (question 9 of the POAWS – Appendix D) was developed by the researchers to capture six facets of beliefs relevant to water safety, the value of swimming lessons, and supervision:
1. Inaccurate judgment of swim ability and drown-risk behaviour (4, 8, 11, 13, 16)

2. Swim lessons reduce supervision need (6, 7, 10, 12, 15, 18)

3. Swim lessons are sufficient to protect against drowning (1, 2, 17R – reverse score)

4. Swim lessons lead to overconfidence in parents and children (9R, 14R)

5. Supervision is not valued as a drowning prevention strategy (3R)

6. Drowning is not preventable (5R)

A factor analysis was conducted to confirm that items loaded on each facet as expected.

The analyses presented herein are conducted using parents’ score averaged across all 18 questions, with higher scores (possible range: 1 to 7) indicating greater endorsement of these negatively framed facets. The Water Safety Beliefs scale overall has acceptable internal consistency (Chronbach’s alpha = .76).

For question 11 of the POAWS (Appendix D), parents indicated the level of supervision (range: 1 to 3) they thought children would require in five different social contexts across four different water contexts (20 items in total). For simplicity, parents received an overall supervision score that was generated by averaging their responses across all 20 items (i.e., across questions 11a, b, c, d), with lower numbers indicating closer and more vigilant supervision practices.

To determine whether parents were accurate judges of their child’s swim ability, both parents (question 10 of the POAWS – Appendix D) and the child’s swim instructors (Instructor Checklists – Appendices E and F) were asked to rate the child’s swim skill by responding (yes, no) to the same 23 questions. Parents completed more questions than swim instructors about their child’s swim ability, but only those items that were explicitly taught in lessons were included on the instructor checklist. The instructors’ questions (26 items in total) correspond to
question numbers 1-16, and 18 to 24 of question 10 of the POAWS. The instructor was reasoned to be correct because they are trained to be able to accurately evaluate children’s skill level in their role as a swimming instructor. Therefore, if the parent responded in the same way as the instructor, the parent was also considered to be correct in judging their child’s ability on a given item. To receive a rating as correct or incorrect, therefore, both the parent and instructor were required to complete the questionnaire items. Given that not all swim instructors completed checklists, the number of participants included in this section is smaller than in other sections (see Table 1 for a detailed summary of Time 1 and Time 2 instructor checklist data for each site individually and for the sample overall).

Data Analyses.

Question 1.

To address question 1 about parents’ views of the value of swimming lessons, the following analyses were conducted:

1. For question 8 of the POAWS (Appendix D), the percent of parents who endorsed each of the two response options was calculated (life skill, recreation or leisure activity/sport).

2. The mean age was calculated for question 6a of the POAWS at Time 1 to determine at what age, on average, parents thought was best to teach children to learn to swim. A one-way ANOVA was conducted on age to determine if there were differences between parents across sites.

3. The mean age was calculated for question 7 of the POAWS at Time 1 to determine at what age, on average, parents thought that children would be able to keep themselves
from drowning. A one-way ANOVA was conducted on age to determine if there were differences between parents across sites.

4. To determine whether parents whose child started lessons earlier had greater swim ability, a Pearson correlation was used to correlate the age that children were when they started lessons (question 11a of the Demographics questionnaire, see Appendix C; if this was the child’s first lesson their current age was used) with the percentage of 26 skills that children were rated by their instructor as being able to perform at Time 1 (see Appendix E and F for items).

5. To determine whether time in lessons was associated with supervision practices, a Pearson correlation was used to correlate the time that children had spent in lessons (calculated by subtracting the age at which the child started lessons, question 11a of the Demographics questionnaire – see Appendix C, from the child’s current age) with the average of parents’ responses across all 20 items on question 11 of the POAWS (range: 1 to 3; see Appendix D) at Time 1.

Question 2.

To address question 2 about whether parental beliefs change in systematic ways as their child learns to swim, the following analyses were conducted:

1. For question 5a, 5b, and 5c of the POAWS (Appendix D), the percent of responses in each of the six coding categories (teaching, supervision, preventing access/passive prevention, teaching and supervision, supervision and preventing access/passive prevention, teaching and preventing access/passive prevention) was calculated for Time 1 and Time 2. A descriptive analysis was conducted on these percentages to determine how parents generally viewed drowning prevention at Time 1 and Time 2.
2. For question 9 of the POAWS (Water Safety Beliefs scale), an overall score was computed by averaging all 18 items (range: 1 to 7). This was done for Time 1 and Time 2 scores. A repeated-measures ANOVA using site as the between-participants factor was conducted on parents’ average overall score on the Water Safety Beliefs scale. Differences across time are of interest in addressing this research question. Interactions were also explored.

3. For question 11 of the POAWS, an average score was computed based on all 20 items (i.e., averaged across 11a, b, c, d; range: 1 to 3). This was done for Time 1 and Time 2. A repeated-measures ANOVA using site as the between-participants factor was conducted on parents’ overall supervision score. Differences across time are of interest in addressing this research question. Interactions were also explored.

Question 3.

To address question 3 about how swimming lessons influence parents’ perceptions of their child’s swim ability and whether they are accurate judges of this, the following analyses were conducted:

1. Before directly answering this research question, analyses were performed to investigate whether children increased in swim skill over time, and if this differed across sites. The percent of 26 items that instructors rated children as being able to perform (i.e., items receiving “yes” ratings) was calculated for Time 1 and Time 2 (see Appendix E and F for items). A repeated-measures analysis ANOVA using site as the between-participants factor was conducted on the percent of items that the child was able to perform at Time 1 and Time 2. Main effects and interactions were explored.
2. Instructor ratings of children’s swim ability (see Appendix E and F) were compared to parents’ ratings (items 1 to 16, and 18 to 24 of question 10 on the POAWS – Appendix D). If a parents’ rating did not match the instructors’ rating (i.e., an instructor answered “no” but the parent answered “yes”, or vice versa), this was counted as an error. The proportion of errors made by parents at Time 1 and Time 2 was calculated, and a repeated-measures ANOVA using site as the between-participants factor was then conducted on these scores. Main effects and interactions were explored. The proportion scores were converted to percentages after analyses.

Question 4.

To address research question 4 about whether parental involvement in their child’s progress through swim lessons impacts beliefs regarding swim safety, several analyses were conducted:

1. A one-way ANOVA was conducted using site as the between-participants factor on parents’ average score across all 18 items on question 9 of the POAWS (Water Safety Beliefs scale; see Appendix D) at Time 1.

2. As mentioned under question 2, a repeated-measures ANOVA using site as the between-participants factor was conducted on parents’ average score on question 9 of the POAWS (Water Safety Beliefs scale) at Time 1 and Time 2. Differences between groups are of interest in addressing this research question. Interactions were also explored.

3. As mentioned under research question 2, a repeated-measures ANOVA using site as the between-participants factor was conducted on parents’ average overall score on question 11 of the POAWS (averaged across all 20 items) at Time 1 and Time 2.
Differences between groups are of interest in addressing this research question.

Interactions were also explored.

Question 5.

To address question 5 about whether parents’ swim ability and experiencing a “close call” for drowning are related to their beliefs about supervision and water safety, the following analyses were conducted:

Swim Ability.

1. Parents’ rating of swim ability, question 3 on the POAWS (range: 0 to 4, see Appendix D), was correlated with the following scores using Pearson correlations:
   1) Question 6a of the POAWS (i.e., what age do parents believe is the best to teach children to learn to swim) at Time 1.
   2) Question 7 of the POAWS (i.e., what age do parents believe that children will be able to keep themselves from drowning) at Time 1.
   3) Average proportion of errors parents made in judging their child’s swim ability at Time 1 (see point 2 under research question 3 for calculation of errors).
   4) Parents’ average score for each of 11a, b, c, and d (i.e., their scores averaged across social context) on question 11 of the POAWS (range: 1 to 3) at Time 1.

Close Call for Drowning.

2. A repeated-measures ANOVA using the experience of having a close call for drowning (yes, no) as the between-participants factor was conducted on parents’ average score across all 18 items on question 9 of the POAWS (Water Safety Beliefs scale) at Time 1 and Time 2. Main effects and interactions were explored.
3. A repeated-measures ANOVA using the experience of having a close call for drowning (yes, no) as the between-participants factor was conducted on parents’ average overall score on question 11 of the POAWS (averaged across all 20 items; range: 1 to 3) at Time 1 and Time 2. Main effects and interactions were explored.

Data Checking Procedures.

All ANOVAs were conducted including all participants, and were then conducted after removing outliers. Outliers were identified based on standardized Cook’s distance and participants with the greatest Cook’s distance values were removed one by one, with analyses being re-run each time a new outlier was removed (Howell, 2007). No one was removed having a standardized Cook’s distance of less than 3.3 standard deviations. All analyses presented herein contain all possible participants, unless outliers altered the results and needed to be removed.

Where appropriate, variables were examined for violations in normality prior to analysis and if data was markedly skewed, the variables were transformed (Howell, 2007). Square root transformations were deemed appropriate because raw values in all cases were less than 10 and logarithm transformations with a base 10 would therefore be inappropriate. When conducting ANOVAs on the transformed scores, evaluations were performed to ensure that the residuals of the transformed scores were also normally distributed. All analyses presented herein are based on raw (i.e., non-transformed) data unless otherwise noted. For significant results, confidence intervals are also provided. If results are based on transformed values, confidence intervals as well as means and standard deviations are reported using raw data to allow for ease of interpretation.
It should also be noted that the number of participants, and therefore the degrees of freedom, varies across analyses and particularly across time, with there generally being fewer participants over time. This is a result of missing data, participant attrition from Time 1 to Time 2, and occasional instructor non-compliance with completing checklists to appraise children’s swim ability. Lastly, the current study produced many findings, but in the interest of space not all results (regardless of whether they are statistically significant or not) will be elaborated upon. The focus will be on those findings directly relevant to the primary research questions.

Results

Sample Demographics

A total of 387 parents (84.5% mothers, 15.5% fathers) of children aged two through five (M = 4.18 years, SD = 1.15) completed the questionnaire measures at Time 1 (approximately 1750 invitation letters were distributed to parents, either by mail or handed out in person during lessons). Sixty-one participants (16%) had children enrolled in swim classes at the YMCA and 326 (84%) had children enrolled through the Parks and Rec. The sample consisted of parents with equal numbers of male and female children. The majority of participants were Caucasian (93% total), had at least some university or college experience (92%), a household income of at least $60,000 (87%), and were in two parent households (93%). Table 2 provides a more detailed summary of demographic information for the sample overall, as well as for each swim site separately. A total of 301 parents completed the questionnaires at Time 2 as well, 45 from the YMCA (15%) and 256 (85%) from Parks and Rec. Table 3 provides a detailed summary of demographic information for the sample overall, as well as for each swim site separately. Relevant demographic characteristics of the 86 parents who discontinued participation after Time 1 were also explored. It was found that most of these parents were well educated (53% had
a college/university degree, and 27% had postgraduate training) and in the higher income brackets (77% had a household income of at least $80,000, with 34% of them earning above $120,000). Further, the majority (81%) of these parents were Caucasian, 14% were fathers, and 56% had male children. There were no obvious differences in demographics between these parents and those who completed Time 2 data.

The Research Questions

Tables 4 and 5 provide a summary of findings for each outcome measure based on analyses by site, and by close call experience, respectively. Table 6 provides 95% confidence intervals for the mean difference between Time 1 and Time 2. Differences (in the table and presented herein) were calculated by subtracting parents’ Time 1 score from their Time 2 score.

What Are Parents’ Beliefs Overall About Learning to Swim at Time 1? (Question 1)

Overall, parents value learning to swim and 96% view swimming lessons as a life skill rather than a recreation or leisure activity/sport. Parents reported that the best age for children to learn to swim is before the age of two ($M = 1.83$ years, $SD = 1.19$; Range = 0 to 6.0 years; Median = 2.0 years); no differences were observed in the mean age reported by parents across the two sites, $F(1, 378) = .10$, $ns$. Parents believe that children would be able to keep themselves from drowning if they fell into water over their head before the time they are six and a half ($M = 6.21$ years, $SD = 1.99$; Range = 1.0 to 16.0 years; Median = 6.0 years); no differences were observed in the mean age reported by parents across the two sites, $F(1, 372) = .28$, $ns$.

While starting lessons at an earlier age was not found to be associated with greater swim ability as rated by children’s swim instructors at Time 1 ($r = .08$, $ns$), spending more time in lessons was found to be associated with less vigilant supervisory practices by parents ($r = .26$, $p < .001$).
What are Parents’ Beliefs About Drowning Prevention at Time 1 and Time 2? (Question 2)

Tables 7 and 8 provide detailed information about the number of parents who endorsed various prevention approaches for Time 1 and Time 2, respectively, including data for the sample overall and each site separately. At both Time 1 and Time 2, supervision was the most commonly endorsed strategy by parents at both sites and across all age groups. This was followed by a combination of supervision and preventing access/passive prevention. At Time 1, teaching (i.e., how to swim, about water safety) on its own and combined with supervision and preventing access/passive prevention was endorsed very little for children under two years, but was more commonly endorsed for children in the older age groups, particularly for those aged four through five. A similar trend was seen at Time 2, but the percentages were not quite as high. Parents favoured supervision on its own across all age groups more frequently at Time 2 than at Time 1.

Are There Differences Between Sites and Over Time With Regards to Parents’ Beliefs About Water Safety, and Their Supervisory Practices Around Water? (Questions 4 and 2)

To investigate whether parents’ beliefs relevant to water safety, supervision, and the value of swimming lessons differed between sites initially, an ANOVA was conducted with site (2: YMCA, Parks and Rec) as the between-participants factor on parents’ overall score averaged across all questions on the Water Safety Beliefs scale at Time 1. Higher scores indicate more risky beliefs (see Data Coding and Measures Taken under Procedure for the six facets measured). Results revealed no differences between groups ($M = 2.64, 2.59; SD = .62, .64$, for YMCA and Parks and Rec, respectively), $F(1, 385) = .25, ns$. This suggests that parents at both
sites were equivalent at the beginning of the study with regards to their overall beliefs about water safety.

To examine whether parents’ perceptions changed over time as their children progressed through swim lessons, a repeated-measures ANOVA was conducted using site (2: YMCA, Parks and Rec) as the between-participants factor and parents’ overall score averaged across all questions on the Water Safety Beliefs scale as the within-participants factor (2: Time 1, Time 2; square root transformed because of a violation in normality for Time 2 score). Higher scores indicate more risky beliefs. Results revealed a main effect of time, $F(1, 298) = 4.47, p < .05, \eta^2 = .02$. Parents’ score at Time 1 ($M = 2.58, SD = .62; \text{Range} = 1 \text{ to } 4.78; \text{Median} = 2.50$) was significantly higher than at Time 2 ($M = 2.51, SD = .66; \text{Range} = 1.33 \text{ to } 6.17, \text{Median} = 2.44$), 95% CIs [-.17, .03] for the mean difference between Time 1 and Time 2. There was no site by time interaction or main effect of site observed [$F(1, 298) = .06, ns$, and $F(1, 298) = .06, ns$, respectively].

To examine whether parents’ supervisory practices around water differed between sites, a repeated-measures ANOVA using site (2: YMCA, Parks and Rec) as the between-participants factor and overall supervision score averaged across the four water contexts and five social contexts as the within-participants factor (2: Time 1, Time 2; square root transformed) was performed. Lower scores indicate closer supervision practices. Results revealed a main effect of site, $F(1, 296) = 7.96, p < .01, \eta^2 = .03$. Parks and Rec parents reported closer supervisory practices ($M = 1.40, SD = .30$) compared to those at the YMCA ($M = 1.54, SD = .34$), 95% CIs [.04, .24] for the mean difference between sites. There was no site by time interaction or main effect of time observed [$F(1, 296) = .04, ns$, and $F(1, 296) = 1.21, ns$, respectively].
Does Experiencing a Close Call for Drowning Sensitize Parents to Drowning Risk?

(Question 5)

To determine whether having a life experience related to drowning impacts parents’ perceptions of water safety, a repeated-measures ANOVA using life experience (2: did experience a “close call” for drowning, did not) as a between-participants factor and parents’ overall score averaged across all questions on the Water Safety Beliefs scale as the within-participants factor (2: Time 1, Time 2; square root transformed). Higher scores indicate more risky beliefs. After removing three outliers, results revealed that parents who had experienced a close call had less risky views about water safety ($M = 2.46$, $SD = .51$) compared to those who had not ($M = 2.60$, $SD = .59$), $F(1, 295) = 3.99, p < .05$, $\eta^2 = .01$, 95% CIs [.01, .27] for the mean difference between groups. Further, parents demonstrated more risky beliefs at Time 1 ($M = 2.59$, $SD = .62$) than they did at Time 2 ($M = 2.49$, $SD = .61$), $F(1, 295) = 12.47, p < .001$, $\eta^2 = .04$, 95% CIs [-.20, .00] for the mean difference across time. There was no life experience by time interaction observed, $F(1, 296) = .04, ns$.

To further investigate whether parents who had experienced a close call for drowning differed in their actual supervisory practices from those who had not, a repeated-measures ANOVA was conducted using life experience (2: did experience a “close call” for drowning, did not) as a between-participants factor and overall supervision score averaged across the four water contexts and five social contexts as the within-participants factor (2: Time 1, Time 2; square root transformed). Lower scores indicate closer supervision practices. After removing four outliers, results revealed a main effect of group, $F(1, 292) = 4.23, p = .05$, $\eta^2 = .01$. Those who had experienced a close call for drowning ($M = 1.36$, $SD = .25$) were more vigilant about closely supervising children than were parents who had not ($M = 1.44$, $SD = .32$), 95% CIs [.01, .15] for
the mean difference between groups. There was no time by life experience interaction or main
effect of time observed, $F(1, 292) = 2.19$, $ns$, and $F(1, 292) = .03$, $ns$, respectively.

*Does Parents Swim Ability Relate to Beliefs Relevant to Supervision and Water Safety? (Question 5)*

Parents rated their own swim ability on a 0 to 4 scale, with lower numbers indicating less
swim ability (0 = unable to swim from, 4 = can swim competitively). Pearson correlations
revealed that greater parental swim ability was related to a younger age that parents believed
children should start learning to swim ($r = -0.12, p < .05$) as well as a younger age at which
children would be able to prevent themselves from drowning ($r = -0.13, p < .01$). Greater parental
swim ability was also related to fewer errors in judging their child’s swim ability ($r = -0.11, p <
.05$). Further, while greater swim ability was related to less vigilant supervision at the beach ($r =
.09, p < .05$), it was not related to supervision in other contexts such as a shallow pool ($r = -.03,
ns$), the shallow end of a deep pool ($r = .01, ns$), or at the lake ($r = .02, ns$).

*What was Children’s Actual Swim Ability? (Question 3)*

Overall, instructors rated children as being able to perform 61.40% ($SD = 22.83$) of the
26 swim skills at Time 1, and 71.55% ($SD = 22.33$) of the skills at Time 2. To investigate
whether children increased significantly in swim skill over the course of lessons, and if this
differed by site, a repeated-measures ANOVA using site (2: YMCA, Parks and Rec) as the
between-participants factor and percentage of items the instructor rated the child as being able to
perform as the within-participants factor (2: Time 1, Time 2). After removing two outliers,
results revealed a site by swim ability interaction, $F(1, 253) = 4.87, p < .05$. To investigate the
nature of this interaction, follow up one-way ANOVAs were conducted. Results revealed that
children at both schools improved in swim skill over time. For Parks and Rec: $F(1, 324) =$
120.41, \( p < .01 \), \( M = 60.26, SD = 22.52 \); \( M = 71.00, SD = 22.34 \), for Time 1 and Time 2 respectively, 95% CIs [6.67, 14.78] for the mean difference over time; and for YMCA: \( F(1, 19) = 5.43, p < .05 \), \( M = 74.81, SD = 22.75 \); \( M = 78.08, SD = 21.83 \), for Time 1 and Time 2 respectively, 95% CIs [-11.00, 17.54] for the mean difference over time. Further, at Time 1, YMCA children could perform significantly more skills \( M = 74.81, SD = 22.75 \) than Parks and Rec children \( M = 60.26, SD = 22.52 \), \( F(1, 253) = 7.68, p < .01 \), 95% CIs [4.21, 24.89] for the mean difference between sites. At Time 2, however, there was no significant difference in the percent of skills children could perform between sites, \( F(1, 253) = 1.86, ns \), (YMCA: \( M = 78.08, SD = 21.83 \); Parks and Rec: \( M = 71.00, SD = 22.33 \)), 95% CIs [-3.15, 17.31] for the mean difference between sites.

*Are Parents Accurate Judges of Their Child’s Swim Ability? (Question 3)*

To investigate whether there were differences in the proportion of overall errors made by parents across sites and over time, a repeated-measures ANOVA was conducted using site (2; YMCA, Parks and Rec) as the between-participants factor and proportion of errors (converted to percentages after analyses) as the within-participants factor (2: Time 1, Time 2; square root transformed). Results revealed a main effect of time, \( F(1, 205) = 4.53, p < .05, \eta^2 = .02 \). Parents made more errors at Time 1 \( (M = 21\%, SD = 14\%); Range = 0\% to 100\%; Median = 19\% \) than they did at Time 2 \( (M = 19\%, SD = 16\%); Range = 0\% to 96\%; Median = 15\% \), 95% CIs [-.05, .01] for the mean difference in proportions (not percent) over time. There was also a main effect of group, \( F(1, 205) = 6.07, p < .05, \eta^2 = .03 \). Overall, Parks and Rec parents made more errors \( (M = 20\%, SD = 12\%); Range = 0\% to 73\%; Median = 17\% \) than did those at the YMCA \( (M = 13\%, SD = 8\%); Range = 0\% to 27\%; Median = 15\% \), 95% CIs [.01, .13] for the mean difference in proportions. There was no time by site interaction observed, \( F(1, 205) = .39, ns \).
Discussion

A contentious issue in the literature is whether there should be a minimum age to teach children how to swim through formal swimming lessons. Parker and Blanksby (1997) found that starting lessons at a younger age did not result in gaining swim skills earlier, and that it was children who started lessons at four years old who acquired basic locomotion skills fairly quickly. From these findings, and lack of evidence on the contrary, the American Academy of Pediatrics (AAP) adopted the view that formal swimming lessons should not be taught until after age four because children are not developmentally ready until this age (Committee on Sports Medicine and Fitness and Committee on Injury and Poison Prevention, 2000). Based on more current research, however, suggesting that having participated in swimming lessons actually serves a protective function against drowning amongst those aged one to four (Brenner et al., 2009), the AAP revised its stance and no longer advocates for a minimum age for learning to swim, nor does it recommend against teaching young children swimming lessons (Committee on Injury, Violence, and Poison Prevention, 2010).

While swimming lessons may protect against drownings, some evidence suggests that parents with children in swimming lessons have overly optimistic views about this and believe, in turn, that swimming lessons reduce the need for supervision (Moran & Stanley, 2006a). The current community based study further examined beliefs relevant to supervision and drowning risk amongst parents with children aged two through five who were enrolled in swim lessons. It also explored whether there were differences in perceptions between parents across swim organizations and over time as their child progressed through swim lessons, if parents were accurate judges of their child’s swim ability, and whether parent characteristics and life
experience related to drowning impacted their beliefs relevant to supervision and drowning risk. Each of these topics is discussed in turn.

*Parent Beliefs About the Value of Swimming at an Early Age*

Consistent with Moran and Stanley’s findings (2006a), parents in the current study believed that children should learn to swim before the age of two. They also believed that children would be able to prevent themselves from drowning before they were six and a half. Past findings reveal that some parents think toddlers are able to save themselves if they fell into the water (Moran & Stanley, 2006a) and that on average, children as young as 6.7 should be able to take a bath by themselves and without constant supervision (Porter, Crane, Dickinson, Gannon, Drisko, & DiGuiseppi, 2007). Therefore, the current study corroborates past evidence suggesting that parents believe children are not only ready to learn to swim at a young age, but that they can be trusted to keep themselves safe around water. This is particularly concerning given that supervision is an absolutely essential drowning prevention strategy for young children.

*Differences Across Groups, and Over Time*

While there has been some research examining differences between swim organizations (i.e., Leclerc (2007) compared different rescue approach methods between the YMCA and American Red Cross), there is a lack of research on how differences in swim curriculum impact water safety beliefs amongst parents with children enrolled in these programs. The current study offers some insight into the effects of a parent tracking sheet implemented by the Guelph YMCA on parents’ judgment of their child’s swim skill, and beliefs about supervision needs and water safety. The YMCA and Parks and Rec teach very similar swim skills as part of their curriculum for young children, but the YMCA provides parents with a tracking sheet that is regularly updated by swim instructors so they can monitor their child’s progress in swim ability.
Not surprisingly, YMCA parents were shown to be able to more accurately appraise their child’s swim ability than were parents at Parks and Rec. Hence, the tracking program appears to be an effective tool for increasing parental awareness of what their child is actually able to do. This could potentially help parents to more accurately judge and manage their child’s risk around water. However, YMCA parents reported less vigilant supervision practices in a variety of different social and water contexts compared to Parks and Rec parents. Therefore, it is possible that by being able to track improvements in their child’s actual swim skill development, YMCA parents may be developing a false sense of security in their child’s ability and as a result, believe that they do not need to supervise as closely. Taken together, results from the current study suggest that it may be worthwhile to combine the YMCA tracking program with education materials for parents to enhance their beliefs about the importance of close supervision around water. The fact that parents did not differ between sites in their beliefs about water safety and the value of swimming lessons in reducing the need for supervision suggests that parents may be thinking about swimming lessons and risk in similar ways, but that the YMCA group may be becoming overly confident in their child’s ability, which then translates into reductions in supervision.

*Promising Findings and Implications for Intervention*

A promising result was that as children progressed through swim lessons, parents’ beliefs related to drowning risk and prevention shifted to become less risky (i.e., more conservative). This suggests that just by having exposure to their child’s swim lessons, and even without intervention per se, parents are becoming more aware of drowning risks. If parents are already thinking about drowning risks throughout the course of lessons, this could represent an appropriate time to enhance these beliefs through education. Informal parent education during
children’s swim lessons has been shown to be effective in making parents realize the value of supervision and reducing the belief that water safety is the most important reason for enrolling children in lessons (Moran & Stanley, 2006b).

Parents in the current study are likely to be willing to accept messages about supervision since they already value this as a prevention approach for young children, as evident by the fact that this was the most commonly endorsed approach. Further, targeting parent beliefs when their child is young and before they become very proficient swimmers may be especially important given that caregiver supervision around water has been found to become less vigilant as children get older (Petrass, Blitvich, & Finch, 2011). Doing so early on in the course of the child’s swim lessons may be especially important too because, in the current study, the longer the child was in lessons, the less supervision near water parents thought the children needed. Thus, parents of children in lessons may, over time, develop a false sense of security that children can be safe with less supervision.

*The Effects and Implications of Experiencing a “Close Call” for Drowning*

Another important finding was that parents who had experienced a close call for drowning, either personally or with someone that they knew, had less risky beliefs about water safety and reported closer supervisory practices in a variety of different water and social contexts. This suggests that having such an experience can make parents more aware of the potential for “what can happen” around water. Past research suggests that a previous experience with a child’s injury can lead to increases in parental perceptions of risk (Glik, Kronenfeld, & Jackson, 1991; Morrongiello, Howard, Rothman, & Sandomierski, 2010), thereby “sensitizing” them to the potential for injury. Findings from the current study may represent a similar sensitization process, reflected in reduced risk perceptions amongst parents with a “close call”
experience. Interestingly, Laosee, Gilchrist, Khiewyoo, Somrongthong, and Sitthi-amorn (2011) found that a child’s self-reported life threatening submersion experience was related to their swim ability; the authors’ interpretation is that either the child (or their family) wanted the child to accumulate swim skills so that this did not happen again. Just as someone may be motivated to prevent future near drownings by learning to swim, parents in the current study who had a close call for drowning may have been motivated to avoid similar situations for their child by being more vigilant supervisors and more cognizant of the risks around water. It has also been shown that parents perceive drowning to be particularly threatening and often engage in more safety practices to prevent drownings compared to other types of injuries (Morrongiello & Kiriakou, 2004). This belief may be enhanced in parents after experiencing a close call, with the outcome being more vigilant supervision practices.

Experiencing a near drowning may also serve as a “teachable moment” for parents, an event that provides the opportunity to communicate health related information (Lawson & Flocke, 2009). Interventions occurring in close proximity to this event may, therefore, be effective in targeting parents’ perceptions related to drowning risk and supervision. A focus group study of messaging approaches to communicate information about the importance of supervision revealed that parents favoured emotionally delivered testimonials from other parents (Morrongiello, Zdzieborski, Sandomierski, & Lasenby-Lessard, 2009). These testimonials portrayed relatable situations where a child experienced an injury, which may have resulted in death. Many parents saw these as “wake up calls”. Applying these findings to the current study, a similar intervention approach using testimonials from parents conveying their past experience with drownings may effectively communicate information about children’s vulnerability for drowning and the importance of supervision in preventing this.
Further, research supports messaging related to both the value of supervision and swimming lessons. A systematic review by Moran, Quan, Franklin, and Bennett (2011) examined the evidence and literature supporting several different drowning prevention messages for open water situations identified by the International Task Force on Open Water Drowning Prevention (ITFDP). Results revealed that research on the use of some safety messages was lacking (i.e., lifeguards as a primary prevention strategy, swimming companion, safety signs alone), but they did find evidence for messages that focused on constant supervision and the value of swimming lessons. Therefore, it may be effective for future evidence-based interventions to combine both types of messages when communicating safety information to parents.

*Limitations*

While the current study provides many important insights and findings, as with any study, it is not without some limitations.

Selection Bias.

Selection bias is said to occur when there is a “distortion in the estimate of effect resulting from the manner in which subjects are selected into the study population” (Kleinbaum, Morgenstern, & Kupper, 1981, pp. 453 – 454). In the current study, it is possible that parents who participated were systematically different from those who did not. Specifically, they may have had more positive beliefs related to the value of health and safety, which is why, perhaps, they were interested in this research topic.

Some questionnaire data was missing, and the extent to which this was systematic may contribute to bias in results. For example, parents’ errors in judging their child’s swim ability could only be calculated based on items that were answered by both parents and instructors.
There are many possible reasons for either to have missing data, and each may come with a different implication for how results are interpreted. It is possible that missing values for parents could represent uncertainty about their child’s abilities, and for instructors, that the child had not attended enough lessons for them to judge a particular ability. Of course, questions may have also been missed simply in error, or for any other number of reasons. Regardless of why data was missing (which is subject to speculation only), it is worth noting because it did limit who was included in the analyses.

Misclassification Bias.

Misclassification bias relates to the likelihood of misclassifying outcomes or independent variables. If this exists, it can threaten the validity of a study. Cox and colleagues (2009) explain that misclassification occurs when there is error in how participants are classified, and can take place with equal likelihood across groups (non-differential) or with a different likelihood across groups (differential). In the current study, there are some potential sources for both types of misclassification bias.

Analyses were conducted comparing YMCA and Parks and Rec parents to determine whether the parent tracking component unique to the YMCA affected parents’ beliefs. It is possible that the group differences observed could also be due to another variable in addition to site membership. While the researchers believe that it is the explicit and specific feedback that parents receive from instructors on their child’s swim ability (i.e., the tracking sheet) that accounts for between group differences, another notion will be offered. One might argue that differences observed could be amplified by the differential recruitment approaches used between sites. Parks and Rec parents were mailed information letters, and YMCA parents were provided with these letters on site during lessons; therefore, the YMCA sample was limited to parents who
were present at the time of lessons. It is possible, therefore, that these parents are more involved in their child’s lessons in general and this involvement is promoted even more through use of the tracking sheet. It should be noted, however, that recruitment for Parks and Rec parents was also done on site during lessons to help ensure consistency across methods.

Several steps were taken to reduce some non-differential sources of bias in the POAWS questionnaire. Pilot testing was conducted and the researchers avoided ambiguous wording, jargon, and making the questionnaire too long [three sources of bias discussed by Choi and Pak (2005)]. There are, however, several biases that can be associated with the design and completion of questionnaires used in health research (Choi & Pak, 2005), and the POAWS questionnaire is no exception to these vulnerabilities. Questionnaires can sometimes serve as a learning experience for respondents, and some may try to guess the study hypothesis (Choi & Pak, 2005). In the current study, the same questionnaire was repeated over time and it is therefore possible that outcome variables could be affected by such reporting biases. Despite these possible limitations, however, repeating the same questionnaire at two time points can be viewed as a strength of the current study. This allows for a direct comparison of scores over time, which was one of the research questions.

Further, mono-method studies (i.e., using questionnaires only) are often criticized for lacking validity. However, self-report questionnaires were deemed appropriate for the current study to capture parents’ beliefs about drowning and supervision. Evidence for the convergent validity of self-report measures of supervision around water stems from the work of Petrass, Blitvich, and Finch (2011) who found that parents’ reported supervisory practices did indeed reflect their actual supervisory practices in the water context. An area for future research could be to evaluate the convergent validity of constructs measured by the POAWS with other related
measures (although those specific to drowning risk and water safety amongst young children may be limited).

Confounding.

Confounding variables that are not measured or that change over time can have an impact on results and the relationships observed. Cox and colleagues (2009) mention that confounding variables may be measured or not measured. In the current study, there were a few unmeasured variables that may have confounded the results. While it was beyond the scope of the current study to investigate children’s injury history, past research shows that a child’s experience with a medically attended injury can make parents more sensitive to injury severity and children’s vulnerability to injury (Morrongiello, Howard, Rothman, & Sandomierski, 2009). It is possible, then, that the injury experiences of children in the current study could have differentially affected parents’ sensitivity to risk and their perceptions relevant to supervision.

Another unmeasured variable that could potentially have confounded differences over time is the child’s exposure to lessons (i.e., their attendance). The impact of lessons on parents’ beliefs may have been attenuated if they attended fewer lessons, and this could also be related to their accuracy in judging their child’s ability. Further, children’s absences may have also affected instructors’ ratings of their ability (i.e., less accuracy; inability to complete a checklist if the child had not attended enough lessons).

Sample Size.

The generalizability of interpretations derived from between site differences is limited by the small sample size for YMCA parents. This resulted in unbalanced sample sizes between the two sites and at Time 1, YMCA parents comprised fewer than 20% of the entire sample. While
it was not possible to control these response rates, results may be more generalizable to YMCA parents as a whole if there was a larger sample size.

Demographic Composition.

The overall sample was quite homogenous with regards to ethnicity, income, education, and family composition, which may also limit the generalizability of the findings to other groups. Evidence suggests that drowning incidents differ by ethnicity (Quan & Cummings, 2003; Canadian Red Cross, 2003), and parents’ views about supervision have been found to be associated with ethnicity, income, and education (Porter, Crane, Dickinson, Gannon, Drisko, & DiGuiseppi, 2007). While exploring the contribution of family and demographic variables was beyond the scope of the current study, it is possible that these may have related to the pattern of results observed. The current study also did not examine differences between mothers and fathers perceptions. While this may be seen as a possible limitation and a factor that could have affected results, Moran (2009) found that there were no significant differences between males and females in their judgments of drowning risk for children under five years old, suggesting that parent gender may not have had substantial effects on the current study’s results.

Design.

The current study did not have a control group so it was not possible to evaluate how having a child in swimming lessons may have differentially affected parents’ perceptions. While this was beyond the focus of the research questions, an interesting area for future research would be to examine whether Moran and Stanley’s (2006a) findings that swim school parents had more optimistic views compared to community parents generalize to parents’ water safety beliefs and supervision practices as evaluated by the POAWS questionnaire.
Conclusions

Parents value swimming lessons for young children and perceive these to be a critical life skill. While many parents see the importance of supervision as a drowning prevention approach, many also overrate the role of swimming lessons in reducing the need for supervision and, the longer the child is in swim lessons, the more parents do this. Over the course of swim lessons, parents were found to adopt less risky beliefs about water safety, but these beliefs did not translate into closer supervision practices. While differences in swim curriculum (notably the use of a tracking sheet where parents could monitor their child’s progress in swim ability) can result in more accurate appraisals of their child’s swim ability, this might also lead to overconfidence in their child’s swim ability and result in less vigilant supervision practices.

Further, experiencing a “close call” for drowning can sensitize parents to drowning risk and lead them to believe that supervision of children around water needs to be vigilant. These findings suggest the need for parent education to take place during swim lessons that targets beliefs about supervision, and also for interventions that treat a near drowning experience as a “teachable moment” to build on parents’ beliefs about vulnerability to drowning and the importance of supervision in preventing this.
References


Table 1

*Instructor Checklist Data at Time 1 and 2*

<table>
<thead>
<tr>
<th></th>
<th>Number of checklists (% of group)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>YMCA ((N = 61))</td>
<td></td>
</tr>
<tr>
<td>Time 1</td>
<td>22 (36%)</td>
</tr>
<tr>
<td>Time 2</td>
<td>30 (49%)</td>
</tr>
<tr>
<td>Parks and Rec ((N = 326))</td>
<td></td>
</tr>
<tr>
<td>Time 1</td>
<td>238 (73%)</td>
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<tr>
<td>Time 2</td>
<td>258 (79%)</td>
</tr>
<tr>
<td>Overall ((N = 387))</td>
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</tr>
<tr>
<td>Time 1</td>
<td>260 (67%)</td>
</tr>
<tr>
<td>Time 2</td>
<td>288 (74%)</td>
</tr>
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Note: Instructors’ “yes” ratings were carried over from Time 1 to Time 2. Those with Time 1 “yes” data also have Time 2 “yes” data.
Table 2

Demographics at Time 1

<table>
<thead>
<tr>
<th></th>
<th>YMCA</th>
<th>Parks and Recreation</th>
<th>Overall</th>
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</thead>
<tbody>
<tr>
<td>Site</td>
<td>16%</td>
<td>84%</td>
<td>100%</td>
</tr>
<tr>
<td>Parent gender</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Mother</td>
<td>74%</td>
<td>86.5%</td>
<td>84.5%</td>
</tr>
<tr>
<td>Father</td>
<td>26%</td>
<td>13.5%</td>
<td>15.5%</td>
</tr>
<tr>
<td>Child gender</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Female</td>
<td>46%</td>
<td>51%</td>
<td>50%</td>
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<td>Male</td>
<td>54%</td>
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<td>93%</td>
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<td>7%</td>
</tr>
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<td>93%</td>
<td>93%</td>
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<td>Asian-America or Pacific Islander</td>
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<td>3%</td>
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<td>Hispanic or Latino</td>
<td>0%</td>
<td>0.6%</td>
<td>0.5%</td>
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<tr>
<td>Native American, American Indian, or Alaskan Native</td>
<td>0%</td>
<td>0.6%</td>
<td>0.5%</td>
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<td>Other</td>
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<td>3%</td>
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<td>Highest level of education</td>
<td>YMCA</td>
<td>Parks and Recreation</td>
<td>Overall</td>
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<td>--------------------------------------------</td>
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<td>----------------------</td>
<td>---------</td>
</tr>
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<td>7.5%</td>
</tr>
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<tr>
<td>Post-graduate training</td>
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<td>29.8%</td>
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<table>
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<th>Parks and Recreation</th>
<th>Overall</th>
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<td>Overall</td>
</tr>
<tr>
<td>----------------------</td>
<td>------</td>
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<tr>
<td><strong>Site</strong></td>
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<td>85%</td>
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<td>15%</td>
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<td>52%</td>
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<td>48%</td>
<td>48%</td>
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<tr>
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<td>Parks and Recreation</td>
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</tr>
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<td>-------</td>
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<tr>
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<td>Parks and Recreation</td>
<td>Overall</td>
</tr>
<tr>
<td>------------------------------------------------------</td>
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</tr>
<tr>
<td>How swimming lessons are viewed</td>
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<td>Best age to teach children to swim</td>
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<td>1.87 years</td>
<td>1.82 years</td>
<td>1.83 years</td>
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<td>323</td>
<td>380</td>
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<tr>
<td>Best age to prevent drowning</td>
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<td>6.08 years</td>
<td>6.23 years</td>
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</tr>
<tr>
<td>Total N</td>
<td>57</td>
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<td>374</td>
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<tr>
<td>Water Safety Beliefs scale score</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Time 1</td>
<td>2.60</td>
<td>2.58</td>
<td>2.58</td>
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<tr>
<td>Time 2</td>
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<tr>
<td>Total N</td>
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<td>Parks and Recreation</td>
<td>Overall</td>
</tr>
<tr>
<td>-----------------------------------------------------</td>
<td>------</td>
<td>----------------------</td>
<td>---------</td>
</tr>
<tr>
<td><strong>Overall supervision score</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Time 1</td>
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<td>1.41</td>
</tr>
<tr>
<td>Time 2</td>
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<td>1.43</td>
</tr>
<tr>
<td>Total N</td>
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<td>253</td>
<td>298</td>
</tr>
<tr>
<td><strong>Percent of swim skills child could perform</strong></td>
<td></td>
<td></td>
<td></td>
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<td>Time 1</td>
<td>74.81%</td>
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<td>Time 2</td>
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<td>71.55%</td>
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<td>Total N</td>
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<td>255</td>
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<tr>
<td><strong>Proportion of errors in judging swim ability</strong></td>
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<td></td>
<td></td>
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<tr>
<td>Time 1</td>
<td>.15 (15%)</td>
<td>.21 (21%)</td>
<td>.21 (21%)</td>
</tr>
<tr>
<td>Time 2</td>
<td>.11 (11%)</td>
<td>.20 (20%)</td>
<td>.19 (19%)</td>
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<tr>
<td>Total N</td>
<td>16</td>
<td>191</td>
<td>207</td>
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Table 5

Data Summary for Analyses by Close Call Experience

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<th>Outcome measure</th>
<th>Close call</th>
<th>No close call</th>
<th>Overall</th>
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<tr>
<td>Water Safety Beliefs scale score</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Time 1</td>
<td>2.50</td>
<td>2.65</td>
<td>2.58</td>
</tr>
<tr>
<td>Time 2</td>
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<tr>
<td>Total N</td>
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<tr>
<td>Overall supervision score</td>
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<tr>
<td>Time 1</td>
<td>1.35</td>
<td>1.43</td>
<td>1.39</td>
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<tr>
<td>Time 2</td>
<td>1.37</td>
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<td>1.41</td>
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<tr>
<td>Total N</td>
<td>118</td>
<td>176</td>
<td>294</td>
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</table>
Table 6

*95% Confidence Intervals for Differences in Means Between Time 1 and Time 2*

<table>
<thead>
<tr>
<th>Outcome measure</th>
<th>Average within subjects difference (Time 2 – Time 1)</th>
<th>95% Confidence Interval (CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Safety Beliefs scale (site by time)</td>
<td>-.07*</td>
<td>[-.17, .03]</td>
</tr>
<tr>
<td>Overall supervision score (site by time)</td>
<td>.02</td>
<td>[-.04, .08]</td>
</tr>
<tr>
<td>Water Safety Beliefs scale (“close call” by time)</td>
<td>-.10*</td>
<td>[-.20, 00]</td>
</tr>
<tr>
<td>Overall supervision score (“close call” by time)</td>
<td>.02</td>
<td>[-.03, .07]</td>
</tr>
<tr>
<td>Percent of swim skills child could perform (site by time)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parks and Rec</td>
<td>10.74*</td>
<td>[6.67, 14.78]</td>
</tr>
<tr>
<td>YMCA</td>
<td>3.27*</td>
<td>[-11.00, 17.54]</td>
</tr>
<tr>
<td>Proportion of errors in judging swim ability (site by time)</td>
<td>-.02*</td>
<td>[-.05, 01]</td>
</tr>
</tbody>
</table>

Note: * denotes a significant difference
Table 7

*Prevention Approaches Endorsed by Parents at Time 1*

<table>
<thead>
<tr>
<th></th>
<th>YMCA</th>
<th>Parks and Recreation</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Under 2 years</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching</td>
<td>0 (0%)</td>
<td>3 (.95%)</td>
<td>3 (.8%)</td>
</tr>
<tr>
<td>Supervision</td>
<td>26 (45%)</td>
<td>192 (60.6%)</td>
<td>218 (58.1%)</td>
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<td>Preventing access</td>
<td>7 (12%)</td>
<td>31 (9.8%)</td>
<td>38 (10.1%)</td>
</tr>
<tr>
<td>Teaching and preventing access</td>
<td>0 (0%)</td>
<td>3 (.95%)</td>
<td>3 (.8%)</td>
</tr>
<tr>
<td>Supervision and teaching</td>
<td>3 (5%)</td>
<td>12 (3.8%)</td>
<td>15 (4%)</td>
</tr>
<tr>
<td>Supervision and preventing access</td>
<td>22 (38%)</td>
<td>76 (24%)</td>
<td>98 (26.1%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>58</td>
<td>317</td>
<td>375</td>
</tr>
<tr>
<td><strong>2 to 3 years</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching</td>
<td>0 (0%)</td>
<td>11 (3%)</td>
<td>11 (3%)</td>
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<tr>
<td>Supervision</td>
<td>24 (41%)</td>
<td>160 (50%)</td>
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<td>35 (11%)</td>
<td>42 (11%)</td>
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<td>2 (3%)</td>
<td>6 (2%)</td>
<td>8 (2%)</td>
</tr>
<tr>
<td>Supervision and teaching</td>
<td>7 (12%)</td>
<td>31 (10%)</td>
<td>38 (10%)</td>
</tr>
<tr>
<td>Supervision and preventing access</td>
<td>19 (32%)</td>
<td>75 (24%)</td>
<td>94 (25%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>59</td>
<td>318</td>
<td>377</td>
</tr>
<tr>
<td></td>
<td>YMCA</td>
<td>Parks and Recreation</td>
<td>Overall</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>--------</td>
<td>----------------------</td>
<td>---------</td>
</tr>
<tr>
<td><strong>Frequency (%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>4 to 5 years</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching</td>
<td>7 (12%)</td>
<td>44 (13.8%)</td>
<td>51 (14%)</td>
</tr>
<tr>
<td>Supervision</td>
<td>19 (32%)</td>
<td>139 (43.7%)</td>
<td>158 (42%)</td>
</tr>
<tr>
<td>Preventing access</td>
<td>7 (12%)</td>
<td>24 (7.6%)</td>
<td>31 (8%)</td>
</tr>
<tr>
<td>Teaching and preventing access</td>
<td>0 (0%)</td>
<td>5 (1.6%)</td>
<td>5 (1%)</td>
</tr>
<tr>
<td>Supervision and teaching</td>
<td>11 (19%)</td>
<td>47 (14.8%)</td>
<td>58 (15%)</td>
</tr>
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<td>Supervision and preventing access</td>
<td>15 (25%)</td>
<td>59 (18.6%)</td>
<td>74 (20%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>59</td>
<td>318</td>
<td>377</td>
</tr>
</tbody>
</table>

*Note:* teaching includes teaching to swim, about water safety, and comfort with water. Preventing access includes passive prevention approaches.
Table 8

*Prevention Approaches Endorsed by Parents at Time 2*

<table>
<thead>
<tr>
<th></th>
<th>YMCA</th>
<th>Parks and Recreation</th>
<th>Overall</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Frequency (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Under 2 years</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching</td>
<td>0 (0%)</td>
<td>2 (0.8%)</td>
<td>2 (1%)</td>
</tr>
<tr>
<td>Supervision</td>
<td>29 (69%)</td>
<td>207 (81.5%)</td>
<td>236 (80%)</td>
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<tr>
<td>Preventing access</td>
<td>3 (7%)</td>
<td>12 (4.7%)</td>
<td>15 (5%)</td>
</tr>
<tr>
<td>Teaching/preventing access</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Supervision and teaching</td>
<td>3 (7%)</td>
<td>7 (2.8%)</td>
<td>10 (3%)</td>
</tr>
<tr>
<td>Supervision/preventing access</td>
<td>7 (17%)</td>
<td>26 (10.2%)</td>
<td>33 (11%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>42</td>
<td>254</td>
<td>296</td>
</tr>
<tr>
<td><strong>2 to 3 years</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching</td>
<td>0 (0%)</td>
<td>4 (1.6%)</td>
<td>4 (1%)</td>
</tr>
<tr>
<td>Supervision</td>
<td>27 (64%)</td>
<td>186 (73.2%)</td>
<td>213 (72%)</td>
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<tr>
<td>Preventing access</td>
<td>3 (7%)</td>
<td>13 (5.1%)</td>
<td>16 (5%)</td>
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<tr>
<td>Teaching/preventing access</td>
<td>0 (0%)</td>
<td>2 (.8%)</td>
<td>2 (1%)</td>
</tr>
<tr>
<td>Supervision/teaching</td>
<td>4 (10%)</td>
<td>22 (8.7%)</td>
<td>26 (9%)</td>
</tr>
<tr>
<td>Supervision/preventing access</td>
<td>8 (19%)</td>
<td>27 (10.6%)</td>
<td>35 (12%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>42</td>
<td>254</td>
<td>296</td>
</tr>
<tr>
<td>YMCA</td>
<td>Parks and Recreation</td>
<td>Overall</td>
<td></td>
</tr>
<tr>
<td>----</td>
<td>---------------------</td>
<td>--------</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Frequency (%)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 to 5 years</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching</td>
<td>3 (7%)</td>
<td>19 (7.5%)</td>
<td>22 (7%)</td>
</tr>
<tr>
<td>Supervision</td>
<td>23 (53.4%)</td>
<td>171 (67.6%)</td>
<td>194 (66%)</td>
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<tr>
<td>Preventing access</td>
<td>3 (7%)</td>
<td>9 (3.6%)</td>
<td>12 (4%)</td>
</tr>
<tr>
<td>Teaching/preventing access</td>
<td>0 (0%)</td>
<td>3 (1.2%)</td>
<td>3 (1%)</td>
</tr>
<tr>
<td>Supervision/teaching</td>
<td>6 (14%)</td>
<td>24 (9.5%)</td>
<td>30 (10%)</td>
</tr>
<tr>
<td>Supervision/preventing access</td>
<td>8 (18.4%)</td>
<td>27 (10.7%)</td>
<td>35 (12%)</td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>253</td>
<td>296</td>
</tr>
</tbody>
</table>

*Note: teaching includes teaching to swim, about water safety, and comfort with water. Preventing access includes passive prevention approaches.*
Figure 1

Completion of Measures

TIME 1: INSTRUCTOR
Completes swim ability checklist

TIME 1: PARENT (PARKS AND REC)
Completes questionnaires before lesson 3

TIME 1: PARENT (YMCA)
Completes questionnaires between lesson 2 and 4

TIME 2: INSTRUCTOR
Completes swim ability checklist

TIME 2: PARENTS (ALL)
Completes questionnaires within last two weeks

TIME 1 PARENT MEASURES:
• Consent
• Demographics Questionnaire
• Parental Opinions About Water Safety Questionnaire (POAWS)
• Big Five Inventory (Conscientiousness and Neuroticism subscales)
• Parental Authority Questionnaire – Revised (Permissiveness subscale)

TIME 2 PARENT MEASURES:
• Re-consent
• POAWS
Appendix A

A STUDY OF PARENTS’ PERCEPTIONS OF WATER SAFETY

PARTICIPANT #: __________________
DATE (DD/MM/YYYY): _______________

PROJECT INVESTIGATORS:

Dr. Barbara A. Morrongiello
Department of Psychology
University of Guelph
(519) 824 – 4120, ext. 53086

Dr. Brent Hagel
Department of Paediatrics and Community Health Sciences
University of Calgary
(403) 955 – 7403

Megan Sandomierski, B.A.
Department of Psychology
University of Guelph
(519) 824 – 4120, ext. 55033

CONSENT FORM FOR PARENTS’ PERCEPTIONS OF WATER SAFETY PROJECT

PURPOSE

This project is being conducted throughout Guelph and is about what parents think about children learning to swim and water safety, and how their ideas change over time as children progress through swim lessons.

PROCEDURE

If you volunteer to participate in this study, we would ask you to do the following things:

You will be asked to fill out a few short questionnaires about parenting and your child’s behaviour before your child starts swim lessons (or right at the beginning of their lessons). You will also be asked to complete a questionnaire that focuses on water safety. Then, towards the end of your child’s sequence of swim lessons, you will complete this same questionnaire about water safety again. These questionnaires are easy to complete.

POTENTIAL RISKS, BENEFITS, COMPENSATION, AND RESULTS

Your participation is voluntary and there are no known risks associated with participation. By completing these questionnaires, you will be helping us gain a greater understanding of what
parents think about water safety and learning to swim, which can have important implications for finding the best ways to promote children’s safety in the water. As a token of our appreciation for your time, you will receive a gift card for a free movie rental at Blockbuster or a five-dollar gift card for Tim Horton’s, whichever you prefer, at completion of the study. If you would like a summary of our findings, please indicate this when asked on the questionnaire and we will forward you a copy via email.

CONFIDENTIALITY, PARTICIPATION, AND WITHDRAWAL

Every effort will be made to ensure confidentiality of any identifying information that is obtained in connection with this study. Your responses to the questions will be kept strictly confidential and your name will not be given to anyone, to the extent allowable by law, or appear on your data that is collected. The completed questionnaires will be stored in a secure manner for five years, as specified by the Canadian Psychological Association research and ethics guidelines (online questionnaires are stored on a secure server).

Your involvement in this study is completely voluntary. If you decide to participate, you may withdraw at any time without any consequences. You may exercise the option to remove your data from the study. You may also refuse to answer any questions you do not want to answer, and still remain in the study. The investigator may withdraw you from this research if circumstances arise that warrant doing so.

RIGHTS

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study. This project has been reviewed and received ethics clearance through the University of Guelph Research Ethics Board. If you have questions regarding your rights as a research participant, contact:

Research Ethics Coordinator
University of Guelph
437 University Centre
Guelph, ON  N1G 2W1

Telephone: (519) 824 – 4120, ext. 56606
E-mail: sauld@uoguelph.ca
Fax: (519) 821 – 5236

I have read the information provided for “A Study of Parents’ Perceptions of Water Safety” as described herein. My questions have been answered to my satisfaction, and I agree to participate in this study.

My signature below indicates my willingness to participate in this study.

<table>
<thead>
<tr>
<th>Name of parent (please print)</th>
<th>Signature</th>
<th>Date (dd/mm/yyyy)</th>
</tr>
</thead>
</table>
Appendix B

A STUDY OF PARENTS’ PERCEPTIONS OF WATER SAFETY

PARTICIPANT #: __________________
DATE (DD/MM/YYYY): ______________

PARENTS’ PERCEPTIONS OF WATER SAFETY PROJECT

This project is about what parents think about children learning to swim and water safety, and how their ideas might change over time as children progress through swim lessons. Please circle “yes” to indicate that you consent to continue taking part in this research.

Yes    No
Appendix C

DEMOGRAPHICS

To help us learn more about who is participating in this research, please answer the following questions. No personal information will ever be released; we only report group summaries.

a) Because this is a two-part study, we would like to contact you one more time towards the end of your child’s swim lessons and ask you to complete another short questionnaire. Please provide your email address, phone number, or both (however you would prefer to be reached) so we can contact you when the time comes for this to be completed. Thank you!

    Email address: ________________________________
    Phone number: ________________________________

b) Please indicate what the best time is for us to reach you by phone:
   ______________________________

c) Would you like a copy of the study results sent to you when this project is completed?

   YES _____   NO______

   If YES, please provide your email address here if not entered above: ________________________________

d) Would you like to be added to our confidential “Family Contact List” so we can let you know about new projects we are starting in the future that you might enjoy?

   YES _____   NO______

   Please provide the following information for our “Family Contact List”:

   Your first name: ________________________________
   Your last name: ________________________________
   Your spouse’s name (if applicable): ________________________________
   Phone number: ________________________________
   Name, sex, and date of birth (dd/mm/yyyy) of ALL children:

   _______________________________________________________
   _______________________________________________________
   _______________________________________________________
Address:
_______________________________________________
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
1) Today’s date: Day: __________ Month: __________ Year: __________

2) Date of birth of child you have in this class: Day: __________ Month: __________ Year: __________

3) Child is a: _____ Boy _____ Girl

4) YOU are a: _____ Mother _____ Father

5) This child’s FIRST name: _____________________

6) Your FIRST name: _____________________

7) Name of this child’s current swim class (please check one):

   ____ Bubblers       ____ Duck
   ____ Bobbers        ____ Seaturtle 1
   ____ Floaters       ____ Seaturtle 2
   ____ Bobbers/Floaters ____ Salamander
   ____ Gliders        ____ Sunfish
   ____ Floaters/Gliders ____ Crocodile
   ____ Divers         ____ Whale
   ____ Gliders/Divers
   ____ Surfer
   ____ Divers/Surfer
   ____ Dipper
   ____ Surfer/Dipper

8) Day and time the class meets each week: _______________________________________

9) Name of this child’s swim instructor, if known: ____________________________________
10) Site of child’s swim lessons (*please check one*):

- YMCA-YWCA of Guelph
- West End Community Centre (WECC)
- Victor Davis Pool
- Centennial Pool

11) If this is your child’s first swim class of any kind then *skip to question 12*, otherwise please tell us:

a) How old was this child when s/he first started swim lessons: _______ Years _____ Months

b) In general, would you say that since starting your child in swim lessons, s/he has been in lessons:

   a) Pretty well continuously (i.e., throughout the fall, winter, and summer each year)
   b) Fairly continuously except for an occasional break time (i.e., summer off)
   c) Intermittently (with breaks throughout the year, not just the summer)
   d) I really don't recall

**Please answer the following questions in reference to this child who is taking swim lessons**

12a) How many OLDER siblings living in the SAME home does this child have: ___________

b) What are their ages? (*please provide years for each*) _____________________________

c) How would you rate each sibling’s swim ability starting with the OLDEST:

The oldest sibling:

0 = Can’t really swim
1 = Can swim a little, but not well
2 = Can swim fairly well
3 = Can swim very well

Next youngest sibling:

0 = Can’t really swim
1 = Can swim a little, but not well
2 = Can swim fairly well
3 = Can swim very well
Next youngest sibling:

0 = Can’t really swim  
1 = Can swim a little, but not well  
2 = Can swim fairly well  
3 = Can swim very well

13a) How many YOUNGER siblings living in the SAME home does this child have: ________

b) What are their ages? (please provide years for each) _____________________________

c) How would you rate each younger sibling’s swim ability starting with the YOUNGEST:

The youngest sibling:

0 = Can’t really swim  
1 = Can swim a little, but not well  
2 = Can swim fairly well  
3 = Can swim very well

Next oldest sibling:

0 = Can’t really swim  
1 = Can swim a little, but not well  
2 = Can swim fairly well  
3 = Can swim very well

Next older sibling:

0 = Can’t really swim  
1 = Can swim a little, but not well  
2 = Can swim fairly well  
3 = Can swim very well

14) How many times during the week do you usually sit down as a family to eat dinner together?  
________________
Generally, how true are the following statements of your family *(please circle one response only)*:

15) Siblings play together in the playroom or bedroom and get along well so a parent doesn’t have to be there watching every moment:

1 = Not really true
2 = Somewhat true
3 = Fairly true
4 = Very true

16) Parents work different schedules and are often coming and going out of the house, forming a “tag team” for parenting children (i.e., one parent is at home while the other is at work; parents work long hours or multiple jobs and need to coordinate their schedules accordingly so at least one person is at home with children):

1 = Not really true
2 = Somewhat true
3 = Fairly true
4 = Very true

17) Children are involved in many extracurricular activities so the household has quite a busy schedule:

1 = Not really true
2 = Somewhat true
3 = Fairly true
4 = Very true

18) Please check your ethnicity:

[ ] African-American or Black
[ ] Asian-American or Pacific Islander
[ ] Caucasian or White
[ ] Hispanic or Latino
[ ] Native American, American Indian, or Alaskan Native
[ ] Other

19) Please check YOUR highest level of education:

[ ] Some High School
[ ] High School Diploma
[ ] Some College/University
[ ] College/University Degree
[ ] Post-graduate Training
20) Please check your family’s annual income level:

- [ ] Below $20,000
- [ ] $20,000 – $39,999
- [ ] $40,000 – $59,999
- [ ] $60,000 – $79,999
- [ ] $80,000 – $99,999
- [ ] $100,000 – $120,000
- [ ] Above $120,000

21) Please indicate if YOU have taken any of the following courses (*check all that apply)*:

- [ ] First-aid course
- [ ] CPR course
- [ ] Pre-natal course
- [ ] Parenting course

22) Please indicate which best describes your family’s current household:

- [ ] Single parent household
- [ ] Two-parent household (i.e., married or common-law)
Appendix D

PARTICIPANT #: __________________
DATE (DD/MM/YYYY): __________________

PARENTAL OPINIONS ABOUT WATER SAFETY

THE PURPOSE OF THIS QUESTIONNAIRE IS TO FIND OUT YOUR THOUGHTS ABOUT OUTDOOR WATER SAFETY. PLEASE ANSWER EACH OF THE FOLLOWING QUESTIONS. THERE ARE NO RIGHT OR WRONG ANSWERS, WE SIMPLY WANT TO KNOW WHAT YOU THINK.

BY ‘OUTSIDE WATER’ WE MEAN WATER THAT YOUR CHILD MIGHT SWIM OR PLAY IN OUTDOORS THAT IS NOT LIFEGUARDED AND IS AT LEAST 2 FEET IN WATER DEPTH (E.G., BACKYARD POOL, LAKE). THIS DOES NOT INCLUDE SMALL SHALLOW PLASTIC OR RUBBER POOLS THAT ARE USUALLY LESS THAN 2 FEET DEEP.

IN COMPLETING THIS QUESTIONNAIRE, IF WE ASK ABOUT ‘CHILDREN’ PLEASE ANSWER THE QUESTIONS WITH 2 – 5 YEAR OLDS IN MIND.

1) When the weather is nice, do you have regular access to OUTSIDE WATER situations? (E.G., lakes, waterfront property, backyard pools)

   ___ Yes
   __ A) How so?
          Check all that apply
          ___ Lakes or streams
          ___ Waterfront property
          ___ Beaches
          ___ Backyard pools
          ___ Other (please list)

   ___ No

b) In these situations has your child regularly received any “learn to swim” types of teaching or coaching (E.G., by a parent or other relative)?

   ___ Yes ___ No

___ No

2) Do you know how to swim at least 15 feet (4.5 meters)? ___ Yes ___ No
3) Please check off **ONE** answer to indicate **YOUR** level of swimming ability:

- [ ] Unable to swim
- [ ] Can swim a little, but not comfortable in deep water
- [ ] Comfortable in deep water, but cannot swim very long or far
- [ ] Able to swim for an extended period of time and distance
- [ ] Can swim competitively (or could) and for an extended period of time and distance

4) Have you or anyone you know personally ever had a “close call” for drowning?

- [ ] Yes
- [ ] No

5) What do you think is the **SINGLE BEST** way to prevent drowning in **OUTSIDE WATER SITUATIONS**…

   a) … for toddlers under 2 years of age?

   

   b) … for children 2 and 3 years of age?

   

   c) … for children 4 and 5 years of age?

   

6) a. What is the **BEST AGE** for children to begin to learn to swim?

- [ ] YEARS
- [ ] MONTHS

**WHY** – what is it that makes children at this age ready to begin to learn to swim? 

(Please select **ONE** answer from the options below and check that one)

- [ ] Physical size and motor abilities
- [ ] Attention and ability to maintain focus
- [ ] Cognitive/language skills and ability to understand instructions
- [ ] Compliance or ability to follow instructions
- [ ] Fear of water makes them want to learn how to stay safe
- [ ] Other (please list): _______________________________
b. Thinking about YOUR OWN young child, what do you think is/was the BEST AGE to begin to educate him/her about how to stay safe around OUTDOOR WATER?

______ YEARS ______ MONTHS

7) How old do you think your child will be when s/he has learned to swim well enough to prevent themselves from drowning if they were to fall in water over their head?

______ YEARS ______ MONTHS

8) People often have different perspectives about the value of learning to swim. Select which ONE of the following options is most true about how you view swimming lessons:

___ It is a recreational or leisure activity/sport

OR

___ It is a life skill

9) Please select a number between 1 and 7 to indicate the extent to which you agree or disagree with each of the following statements. For each statement, please assume we are talking about children YOUR CHILD’S AGE.

1 = COMPLETELY DISAGREE
2 = MOSTLY DISAGREE
3 = SOMewhat DISAGREE
4 = SORT OF DISAGREE AND SORT OF AGREE
5 = SOMewhat AGREE
6 = MOSTLY AGREE
7 = COMPLETELY AGREE

1. _____ Swim lessons can prevent children at this age from drowning.
2. _____ The earlier children learn to swim, the safer they are when near water.
3. _____ Close supervision by adults is the best way to prevent children at this age from drowning.
4. _____ Children are good judges of their swimming abilities at this age.
5. _____ Drowning is preventable for children at this age.
6. _____ Children at this age who have had swimming lessons have learned how to behave safely near water and no longer need to be watched constantly.
7. _____ When children at this age drown it is because they have not learned to swim well enough.
8. _____ Parents are usually good judges of their child’s swimming abilities.
1 = COMPLETELY disagree
2 = MOSTLY disagree
3 = SOMEWHAT disagree
4 = SORT OF disagree and SORT OF agree
5 = SOMEWHAT agree
6 = MOSTLY agree
7 = COMPLETELY agree

9. _____ Swimming lessons for children can lead parents to assume their child is a better swimmer than s/he actually is.
10. _____ For children at this age, learning to swim is better than relying on supervision to prevent child drowning.
11. _____ Children at this age have a good sense of the potential dangers of pools.
12. _____ Children who take swimming lessons have been taught about water safety, which reduces their need for constant supervision when near water.
13. _____ Children at this age know not to go near water if they can’t keep themselves safe.
14. _____ Swimming lessons can lead children to be over confident about their swimming abilities.
15. _____ Children at this age may fall in water that is over their head, but as long as they have had swim lessons there is little risk of drowning when this happens.
16. _____ Children who have had swimming lessons have learned not to do risky things when near water.
17. _____ Children at this age may gain some swimming abilities from lessons but they are not likely to learn enough to prevent themselves from drowning.
18. _____ If children learn to swim then parents don’t have to be there watching them every minute when they are near water.

10) For each statement below, think about YOUR CHILD’S behavior in a pool like the one used for his/her swimming lessons and assume s/he is NOT using any devices to help him/her float (e.g., lifejackets, floaties, noodles). Please check the appropriate box to indicate your child's ability to do the following (please check only ONE). Note: Victor Davis and the West End Community Centre pools are 25 metres in length, the YMCA-YWCA of Guelph pool is 20 metres, and Centennial pool is 25 yards.
<table>
<thead>
<tr>
<th>AT THIS TIME, MY CHILD …</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Is comfortable getting his/her face, head and body wet with assistance</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2. Can enter the pool with assistance</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>3. Can change directions in the water with assistance</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4. Can float on his/her back with assistance</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>5. Can float on his/her front with assistance</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>6. Can jump into chest-deep water with assistance</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>7. Can glide on his/her back with assistance</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>8. Can glide on his/her front with assistance</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>9. Can move around in the water by kicking or splashing feet with assistance</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>10. Is comfortable having his/her face under water</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>11. Can tread water or doggie paddle to stay afloat for at least 10 seconds</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>12. Can swim without touching the bottom</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>13. Can float on his/her back for 5 seconds</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>14. Can float on his/her stomach for 5 seconds with their face in the water</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>15. Can get to the top of the water if s/he falls under</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>16. Knows safety rules about being near water (e.g., no running or pushing)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>17. Can keep from drowning if s/he fell under</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
18. Can swim on his/her stomach for:  
   5 metres (16.5 feet)  
   7 metres (23 feet)  
   10 metres (33 feet)  

19. Can swim on his/her back for:  
   7 metres (23 feet)  
   10 metres (33 feet)  

20. Can jump off the side of a pool into water over  
   his/her head  

21. Can swim 1.5 metres (5 feet) back to the wall  
   if s/he jumped in  

22. Can get to the side without help if s/he  
   fell in water over his/her head  

23. Can climb out along the side of an in-ground  
   pool by him/herself  

24. Would feel comfortable to jump into a pool from the  
   side even if the water were over his/her head  

25. Knows to check the depth of water before  
   jumping into a pool  

26. Understands drowning being a risk in pools  

27. Can be trusted to follow safety rules near pools if  
   a supervisor is not watching constantly  

28. Thinks s/he is a better swimmer than s/he actually is  

29. Often is fearful and needs encouragement to get  
   in or when in a pool
30. Knows to call for help if need be when in a pool

31. Has a healthy fear of ‘what can happen’ in a pool

32. Knows not to go in themselves but to call an adult if someone in the water needs help

33. Knows to climb out at the side of the pool if steps are not available/nearby

34. Knows to turn around and grab the wall after jumping or falling into the pool

35. Knows not to enter a pool until invited to do so or told they can do so by an adult

36. Is likely to panic if s/he falls into water that is over his/her head

37. Knows enough about pool safety and swimming that s/he does not require constant supervision near pools

1) Children have a need for supervision around outside water. However, the level of supervision required will vary from child to child depending on their age, personality, swimming ability, the child’s tendency to obey rules, and many other factors.

For each situation in the four scenarios below, please indicate what level of supervision your child would need at this time.

Please select one of the following for each situation, and enter that number on the line for each item.

1 = I would be nearby and watching constantly (i.e., never taking my eyes off my child)

2 = I would be nearby and watching intermittently (e.g., reading a book and looking up frequently)

3 = I would not need to be right there but I would listen constantly and come check on my child frequently
a) YOUR CHILD is in a backyard pool that is SHALLOW so the child can touch bottom everywhere in the pool and there is no water over his/her head. How would you monitor the child if s/he is:

[Enter a 1, 2, or 3 on the line for each item]

_____ Swimming/playing alone (e.g., splashing around on the surface)
_____ Swimming/playing with friends (e.g., tossing a beach ball)
_____ Swimming/playing with other adults nearby and the adults are watching intermittently
_____ Swimming/playing with other adults nearby and the adults are watching constantly
_____ Swimming/playing and a neighbor who is a lifeguard is watching

b) YOUR CHILD is in the SHALLOW END of an in-ground pool that also has a deep end, with a rope differentiating the two. How would you monitor the child if s/he is:

[Enter a 1, 2, or 3 on the line for each item]

_____ Swimming/playing alone (e.g., splashing around on the surface)
_____ Swimming/playing with friends (e.g., tossing a beach ball)
_____ Swimming/playing with other adults nearby and the adults are watching intermittently
_____ Swimming/playing with other adults nearby and the adults are watching constantly
_____ Swimming/playing and a neighbor who is a lifeguard is watching

c) YOUR CHILD is in a lake where s/he cannot touch the bottom, but can hold on to the dock that has a ladder. How would you monitor the child if s/he is:

[Enter a 1, 2, or 3 on the line for each item]

_____ Swimming/playing alone (e.g., splashing around on the surface)
_____ Swimming/playing with friends (e.g., tossing a beach ball)
_____ Swimming/playing with other adults nearby and the adults are watching intermittently
_____ Swimming/playing with other adults nearby and the adults are watching constantly
_____ Swimming/playing and a neighbor who is a lifeguard is watching
d) **YOUR CHILD** is in the water at a beach where s/he can touch the bottom close to the shore, but the water becomes deeper further away from the shore. How would you monitor the child if s/he is:

[Enter a 1, 2, or 3 on the line for each item]

- ____ Swimming/playing alone (e.g., splashing around on the surface)
- ____ Swimming/playing with friends (e.g., tossing a beach ball)
- ____ Swimming/playing with other adults nearby and the adults are watching intermittently
- ____ Swimming/playing with other adults nearby and the adults are watching constantly
- ____ Swimming/playing and a neighbor who is a lifeguard is watching

12) For each of the following statements, please select a number between 1 and 5 to indicate the extent to which this is true for **YOUR CHILD**.

1. ____ If there is a way to get hurt doing something, my child will.
2. ____ My child often does what s/he is told even if it is not something s/he wants to do.
3. ____ My child does all sorts of silly things when his/her friends are around.
4. ____ I’ve never been surprised by the crazy risks my child will take if the activity is fun.
5. ____ My child is pretty unpredictable in how s/he behaves.
6. ____ I know what to expect of my child’s behavior.
7. ____ It is pretty easy to predict how my child will behave in most situations that involve risk of injury.
8. ____ My child ignores my rules when s/he does not want to do what I am requesting or prohibiting.
9. ____ “Rules” are something I usually have to negotiate with my child.

10. ____ My child is usually careful.

11. ____ My child usually insists on doing what s/he wants to do.

12. ____ My child is usually cautious.

13. ____ As soon as my back is turned, my child often does something s/he isn’t supposed to do.

14. ____ My child is a risk taker who loves doing things to have fun even if s/he might experience a minor injury.

15. ____ I am often surprised by what my child will do.

16. ____ My child is good about following rules I set.

17. ____ My child thinks s/he is invincible.

18. ____ To my child having a fun time is more important than worrying about experiencing a minor injury.

19. ____ My child won’t follow rules even though s/he knows them well.

20. ____ I never know what my child will do in situations that are fun but pose some risk of injury.

21. ____ My child typically complies with rules.

22. ____ I have to check on my child often because I never know what s/he is getting into.

23. ____ My child is a thrill seeker.

24. ____ I ‘know’ my child and how s/he is likely to behave.

25. ____ My child cannot be trusted to follow the rules I set.
1 = Not at all true
2 = A little true
3 = Somewhat true (1/2 and 1/2)
4 = Mostly true
5 = Completely true

26. _____ My child can wait before entering into new activities if s/he is asked to.
27. _____ My child prepares for trips and outings by planning things s/he will need.
28. _____ My child has trouble sitting still when s/he is told to (at movies, church, etc.).
29. _____ My child is good at following instructions.
30. _____ My child approaches places s/he has been told are dangerous slowly and cautiously.
31. _____ My child can easily stop an activity when s/he is told "no."
Appendix E

**INSTRUCTOR CHECKLIST – PARKS AND REC**

You will complete this form two times. 
For now fill in under Time 1: please do it before lesson 4 and RETURN IT to your supervisor at lesson 4.

Instructor’s name: ____________________  Date checklist __________________ (dd/mm/yyyy)  
Child’s name: ____________________  was completed

Site of lessons (circle one):  WECC  Victor Davis pool  Centennial pool

Name of child’s swim class (circle one): 
Duck  Seaturtle 1  Seaturtle 2  Salamander  Sunfish  Crocodile  Whale

Think about this child’s behavior in a pool and assume s/he is not using any devices to help him/her float (e.g., lifejackets, floaties, noodles). For each statement below, please check the appropriate box to indicate the child’s ability to do the following (check only one).

** For Time 2, you only have to indicate whether the child gained a new skill (i.e., only answer Time 2 questions for those you answered "no" to at Time 1)

<table>
<thead>
<tr>
<th>AT THIS TIME, THE CHILD …</th>
<th>TIME 1</th>
<th>TIME 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>

1. Is comfortable getting his/her face, head and body wet with assistance
2. Can enter the pool with assistance
3. Can change directions in the water with assistance
4. Can float on his/her back with assistance
5. Can float on his/her front with assistance
6. Can jump into chest-deep water with assistance
7. Can glide on his/her back with assistance
8. Can glide on his/her front with assistance
<table>
<thead>
<tr>
<th></th>
<th>TIME 1</th>
<th></th>
<th>TIME 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>9</td>
<td>Can move around in the water by kicking or splashing feet with assistance</td>
<td>❑</td>
<td>❑</td>
</tr>
<tr>
<td>10</td>
<td>Is comfortable having his/her face under water</td>
<td>❑</td>
<td>❑</td>
</tr>
<tr>
<td>11</td>
<td>Can tread water or doggie paddle to stay afloat for at least 10 seconds</td>
<td>❑</td>
<td>❑</td>
</tr>
<tr>
<td>12</td>
<td>Can swim without touching the bottom</td>
<td>❑</td>
<td>❑</td>
</tr>
<tr>
<td>13</td>
<td>Can float on his/her back for 5 seconds</td>
<td>❑</td>
<td>❑</td>
</tr>
<tr>
<td>14</td>
<td>Can float on his/her stomach for 5 seconds with their face in the water</td>
<td>❑</td>
<td>❑</td>
</tr>
<tr>
<td>15</td>
<td>Can get to the top of the water if s/he falls under</td>
<td>❑</td>
<td>❑</td>
</tr>
<tr>
<td>16</td>
<td>Knows safety rules about being near water (e.g., no running or pushing)</td>
<td>❑</td>
<td>❑</td>
</tr>
<tr>
<td>17</td>
<td>Can swim on his/her stomach for: 5 metres (16.5 feet)</td>
<td>❑</td>
<td>❑</td>
</tr>
<tr>
<td></td>
<td>7 metres (23 feet)</td>
<td>❑</td>
<td>❑</td>
</tr>
<tr>
<td></td>
<td>10 metres (33 feet)</td>
<td>❑</td>
<td>❑</td>
</tr>
<tr>
<td>18</td>
<td>Can swim on his/her back for: 7 metres (23 feet)</td>
<td>❑</td>
<td>❑</td>
</tr>
<tr>
<td></td>
<td>10 metres (33 feet)</td>
<td>❑</td>
<td>❑</td>
</tr>
<tr>
<td>19</td>
<td>Can jump off the side of a pool into water over his/her head</td>
<td>❑</td>
<td>❑</td>
</tr>
<tr>
<td>20</td>
<td>Can swim 1.5 metres (5 feet) back to the wall if s/he jumped in</td>
<td>❑</td>
<td>❑</td>
</tr>
</tbody>
</table>
21. Can get to the side without help if s/he fell in water over his/her head

22. Can climb out along the side of an in-ground pool by him/herself

23. Would feel comfortable to jump into a pool from the side even if the water were over his/her head

<table>
<thead>
<tr>
<th>TIME 1</th>
<th>TIME 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix F

INSTRUCTOR CHECKLIST - YMCA

You will complete this form two times.

For now fill in under Time 1: please do it before lesson 5 and RETURN IT to your supervisor at lesson 5.

Instructor’s name: ___________________ Date checklist ___________________ (dd/mm/yyyy)
Child’s name: ___________________ was completed

Site of lessons: YMCA-YWCA of Guelph

Name of child’s swim class (circle one):

- Bubblers
- Bobbers
- Floaters
- Bobbers/Floaters
- Gliders
- Floaters/Gliders
- Divers
- Gliders/Divers
- Surfer
- Divers/Surfer
- Dipper
- Surfer/Dipper

Think about this child’s behavior in a pool and assume s/he is not using any devices to help him/her float (e.g., lifejackets, floaties, noodles). For each statement below, please check the appropriate box to indicate the child’s ability to do the following (check only one).

** For Time 2, you only have to indicate whether the child gained a new skill (i.e., only answer Time 2 questions for those you answered "no" to at Time 1)

<table>
<thead>
<tr>
<th>TIME 1</th>
<th>TIME 2 New skill?</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT THIS TIME, THE CHILD …</td>
<td>YES</td>
</tr>
<tr>
<td>1. Is comfortable getting his/her face, head and body wet with assistance</td>
<td>☐</td>
</tr>
<tr>
<td>2. Can enter the pool with assistance</td>
<td>☐</td>
</tr>
<tr>
<td>3. Can change directions in the water with assistance</td>
<td>☐</td>
</tr>
<tr>
<td>4. Can float on his/her back with assistance</td>
<td>☐</td>
</tr>
<tr>
<td>5. Can float on his/her front with assistance</td>
<td>☐</td>
</tr>
<tr>
<td>6. Can jump into chest-deep water with assistance</td>
<td>☐</td>
</tr>
<tr>
<td>7. Can glide on his/her back with assistance</td>
<td>☐</td>
</tr>
<tr>
<td>8. Can glide on his/her front with assistance</td>
<td>☐</td>
</tr>
<tr>
<td></td>
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<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>New skill?</strong></td>
<td><strong>TIME 1</strong></td>
</tr>
<tr>
<td></td>
<td>YES</td>
</tr>
<tr>
<td>9. Can move around in the water by kicking or splashing feet with assistance</td>
<td></td>
</tr>
<tr>
<td>10. Is comfortable having his/her face under water</td>
<td></td>
</tr>
<tr>
<td>11. Can tread water or doggie paddle to stay afloat <strong>FOR</strong> at least 10 seconds</td>
<td></td>
</tr>
<tr>
<td>12. Can swim without touching the bottom</td>
<td></td>
</tr>
<tr>
<td>13. Can float on his/her back for 5 seconds</td>
<td></td>
</tr>
<tr>
<td>14. Can float on his/her stomach for 5 seconds with their face in the water</td>
<td></td>
</tr>
<tr>
<td>15. Can get to the top of the water if s/he falls under</td>
<td></td>
</tr>
<tr>
<td>16. Knows safety rules about being near water (e.g., no running or pushing)</td>
<td></td>
</tr>
<tr>
<td>17. Can swim on his/her stomach for: 5 metres (16.5 feet)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7 metres (23 feet)</td>
</tr>
<tr>
<td></td>
<td>10 metres (33 feet)</td>
</tr>
<tr>
<td>18. Can swim on his/her back for: 7 metres (23 feet)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 metres (33 feet)</td>
</tr>
<tr>
<td>19. Can jump off the side of a pool into water over his/her head</td>
<td></td>
</tr>
<tr>
<td>20. Can swim 1.5 metres (5 feet) back to the wall if s/he jumped in</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TIME 1</td>
</tr>
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</tr>
<tr>
<td></td>
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</tr>
<tr>
<td>21. Can get to the side without help if s/he fell in water over his/her head</td>
<td>☐</td>
</tr>
<tr>
<td>22. Can climb out along the side of an in-ground pool by him/herself</td>
<td>☐</td>
</tr>
<tr>
<td>23. Would feel comfortable to jump into a pool from the side even if the water were over his/her head</td>
<td>☐</td>
</tr>
</tbody>
</table>
Appendix G

Study Information Letter: Parks and Rec

Dear Parent,

We are very happy that your child will be participating in swim lessons this fall. Drowning is a leading cause of death and disability in children all over the world, and children under the age of 5 are at particular risk. In Canada, for example, drowning is the 4th most common cause of unintentional injury death. Finding effective ways to keep children safe around water is of great importance.

I am working with the YMCA and City of Guelph Parks & Recreation Department to conduct a very important research project on water safety that we hope you can help us with. This project will examine what parents think about children learning to swim, their perceptions of water safety, and how their ideas change over time as children progress through swim lessons. We need parents (mothers or fathers) of children aged 2 through 5 who are enrolled in swim lessons to participate in this research, and we could really use your help!

To participate, all you have to do is complete a few short questionnaires at two time points; once at the beginning of your child’s sequence of swim lessons and again towards the end. These questionnaires are short and easy to complete. You can do these either online or by hand, whichever you prefer.

To start, we would like for you to complete some questionnaires anytime before your child’s third swim lesson, but preferably before s/he starts their sequence of swim lessons — you can even do this today online.

Then, towards the end of your child’s swim lessons you will be reminded to complete one questionnaire about water safety again.

That is all you have to do to participate! To thank you for your time, you will receive your choice of a gift card to rent a movie at Blockbuster or for five dollars at Tim Horton’s upon completion of the study.

To participate and complete the questionnaires online (you can access the link now!) please visit the following website: http://portal.psy.uoguelph.ca/wss/swim

If you would prefer to complete the questionnaires by hand, paper copies will be available at your child’s first and second swim lesson – just look for staff from the Child Development Research Unit who will have these.

If you have any questions at all, feel free to email Megan Sandomierski at cdru@uoguelph.ca or msandomi@uoguelph.ca. You can also reach Megan or another research assistant at 519-767-5033 or 519-824-4120 (extension 55033).
PLEASE HELP US OUT AND PARTICIPATE! We need hundreds of participants, and it is only through the support and involvement of parents from the community that we can understand more about how best to keep children safe around water. You’re help would be very much appreciated!

Sincerely,

Barbara Morrongiello, Ph.D., C. Psych.
Professor in Psychology and Director of the Child Development Research Unit
Dear Parent,

We are very happy that your child will be participating in swim lessons this fall. Drowning is a leading cause of death and disability in children all over the world, and finding effective ways to keep children safe around water is of great importance.

I am working with the YMCA-YWCA of Guelph and City of Guelph Parks & Recreation Department to conduct a very important research project on water safety and what parents think about children learning to swim. We need parents (mothers or fathers) of children aged 2 through 5 who are enrolled in swim lessons to participate, and we could really use your help!

All you have to do is complete a few short questionnaires at two time points. You can do these online or by hand, whichever you prefer.

You will start by completing a few questionnaires any time before your child’s fourth swim lesson and preferably as soon as possible – you can even do this today online at: http://portal.psy.uoguelph.ca/wss/swim

Our staff will also have paper copies at your child’s first few swim lessons if you prefer not to do these online.

Later on in your child’s sequence of swim lessons you will be asked to complete one questionnaire about water safety again.

You will receive your choice of a gift card to rent a movie at Blockbuster or for five dollars at Tim Horton’s upon completion of the study.

If you have any questions, feel free to email Megan Sandomierski at edru@uoguelph.ca or msandomi@uoguelph.ca. You can also reach Megan or another research assistant at 519-767-5033 or 519-824-4120 (extension 55033).

Please help us out and participate so we can understand more about how best to keep children safe around water!

Sincerely,

Barbara Morrongiello, Ph.D., C. Psych.
Professor in Psychology and Director of the Child Development Research Unit