

School experiences following traumatic brain injury: A longitudinal qualitative study

Melissa McCart*, Bonnie Todis, Douglas Gomez and Ann Glang

Center on Brain Injury Research and Training, Department of Psychology, University of Oregon, Eugene, OR, USA

Received 8 September 2022

Accepted 1 December 2022

Abstract.

BACKGROUND: This longitudinal qualitative study tracked students with traumatic brain injury (TBI) from hospital discharge through their return to school and then for an average of four years of school.

OBJECTIVE: To better understand the experiences of students and parents in the education system following TBI.

METHODS: Participants were parents and educators of 21 students with TBI. Interviews were conducted using open-ended questions and students were observed in the classroom.

RESULTS: From these data, three themes were identified: lack of student tracking year to year, lack of educator training, and conflicting views between educators and parents about students' needs. These factors ultimately led to parent frustration and eventually conflict and deteriorating relationships between parents and educators.

CONCLUSION: The results suggest that improving educator training could positively affect the factors identified and possibly mitigate parent frustration.

Keywords: Low incidence disability, teacher quality, professional development, teacher education, qualitative

1. Introduction and background

Each year, approximately 23,075 children and adolescents are hospitalized after sustaining moderate to severe brain injuries from motor vehicle crashes, falls, sports, and physical abuse; an additional 812,000 children experience concussion or mild traumatic brain injury (TBI) and are seen in hospital emergency rooms and released (Centers for Disease Control and Prevention, 2019). Those incidence estimates of pediatric TBI are significant undercounts because many

children present to primary care physicians and specialty clinics or seek no treatment at all (Centers for Disease Control and Prevention, 2018; Thurman, 2016).

Children with TBI are at risk for a range of disabilities that impair their academic performance and transition to postsecondary education and employment (Babikian et al., 2015). Children with moderate or severe injuries are likely to have cognitive, behavioral, and social difficulties that affect their long-term quality of life (Rivara, Vavilala, et al., 2012); approximately 62% of students with moderate–severe brain injuries will experience disability (Rivara, Koepsell, et al., 2012). However, even mild injuries (i.e., concussion) to a developing brain can result in persistent

*Address for correspondence: Melissa McCart, DEd. Center on Brain Injury Research and Training, Department of Psychology, University of Oregon, Eugene, OR, USA. E-mail: mccart@uoregon.edu.

neural alterations that significantly affect educational and social functioning (Prasad et al., 2017) and become more pronounced and debilitating with age (Keenan et al., 2018; Prasad et al., 2017).

After a TBI, many students have deficits in attention, concentration, and executive functioning (Babikian et al., 2015;) that limit their achievement and school success. Children with severe TBI are also prone to developing psychiatric disorders following their injuries (Max et al., 2022), with problems persisting or worsening over time (Narad et al., 2019). TBI in youth may be linked to risk-taking behaviors (Kennedy et al., 2017) and challenges with emotional regulation (Williams et al., 2018). After TBI, deficits in social information processing are apparent across a variety of domains, including theory of mind (Dennis et al., 2013) and other higher-level elements of social cognition (On et al., 2021). Disruption of those skills place children at risk for social isolation, difficulties with peer and family relationships, and decreased quality of life (Zamani et al., 2019).

Hospitals and emergency departments treat children and adolescents with TBI in their initial course of recovery, but it is ultimately the school system that serves as the long-term provider of services to these young people (Centers for Disease Control and Prevention, 2018). However, although existing policies and laws (e.g., Individuals with Disability Education Act (IDEA), Section 504) provide a foundation for appropriately serving students with TBI, those students continue to experience significant challenges in school (Fuentes et al., 2018; Rivara, Koepsell, et al., 2012; Rivara, Vavilala, et al., 2012) and poor post-high school outcomes (Todis et al., 2011). A significant body of research documents the health, academic, and social outcomes of childhood TBI (Babikian et al., 2015; Haarbauer-Krupa et al., 2017), but few studies have explored the school experiences of children and youth with TBI.

This study was part of a larger multi-method study that tracked students with TBI from hospital discharge through their return to school (Glang, Todis, et al., 2008). The purpose of the larger study was to examine the factors that influence educational service practices for students with TBI. The sample for the quantitative study was parents of 56 youth who were hospitalized with TBI in the Pacific Northwest. From that larger group, we followed 21 students and examined their parents' and educators' perceptions of their school experiences. That examination produced two qualitative analyses. The first analysis focused on the return to school experience (Todis et al., 2018)

and found that the link between medical and educational staff established when students first returned to school was short-term. In addition, those results showed that most communication between the two systems focused on medical rather than educational factors and did not always lead to the provision of adequate supports, perhaps because educators lacked training in appropriate accommodations and supports after TBI (Todis et al., 2018). The second analysis, presented here, investigates parent and educator perceptions of the child's school experience beyond the initial return-to-school period. Our objective in this analysis was to better understand the school experiences of students with TBI over time by analyzing parent and teacher experiences, perceptions, impressions, and interactions.

2. Methods

Qualitative methodologies can be a valuable tool for providing insight into teacher knowledge, attitudes, and self-efficacy about working with students with TBI—all factors associated with teacher behavior in the classroom (Trainor & Leko, 2014). These methods can also be used for in-depth investigations of parent perceptions of the supports that their children with TBI need (Minney et al., 2019) and their experiences of support after their child sustained a TBI (Kirk et al., 2015). For example, Hartman et al. (2015) used qualitative methods to examine clinician and educator experiences of the return-to-school process, and a recent study used qualitative interviews to ascertain school professionals' understanding of TBI and their perceptions of gaps in their training for working with students with TBI (Sarmiento et al., 2019). Overall, qualitative methodologies allow for a deeper and broader understanding of the school experiences of students with TBI than quantitative approaches can show.

2.1. Participants

We recruited 23 parents representing 21 student cases of TBI from our previous quantitative research study (Glang, Todis, et al., 2008). We used selective sampling to ensure that a range of variables of interest were available to study in our small number of participants (Lincoln & Guba, 1985; Schwartz & Jacobs, 1979). In this study, critical variables included age at injury, severity of injury, family socio-economic status (SES), whether rehabilitation services were

Table 1
Students with TBI participant information

Student	Gender	Age/grade at injury	Severity of injury	Rehab	Urban/Rural	Race	Transition services	IEP	504
10001	Female	12/7th	Severe	Yes	Rural	Caucasian	1	Yes	No
10003	Female	12/7th	Severe	Yes	Rural	Caucasian	3	Yes	No
10009	Male	12/7th	Severe	Yes	Rural	Caucasian	2	No	No
10016	Male	6/1st	Severe	Yes	Rural	Caucasian	2	No	No
10029	Male	8/2nd	Mild/moderate	Yes	Urban	Caucasian	2	No	No
10045	Female	13/8th	Severe	Yes	Rural	Caucasian	3	No	No
10048	Male	12/7 th	Mild	No	Urban	Caucasian	1	Yes	No
10050	Male	14/9th	Severe	Yes	Rural	Caucasian	3	No	Yes
10061	Male	10/5th	Severe	Yes	Urban	Caucasian	2	No	Yes
10064	Male	14/9th	Severe	Yes	Urban	Caucasian	2	No	Yes
10066	Female	12/6th	Severe	Yes	Urban	Caucasian	2	No	No
10068	Male	15/10th	Severe	Yes	Rural	Caucasian	2	Yes	No
10072	Male	13/8th	Mild/Moderate	No	Urban	Caucasian	3	No	No
10075	Male	7/2 nd	Mild/Moderate	No	Urban	Caucasian	3	No	Yes
10077	Male	14/9th	Severe	Yes	Rural	Hispanic	1	Yes	No
10092	Male	4/K	Severe	Yes	Urban	Caucasian	2	No	Yes
10118	Male	4/preschool	Severe	Yes	Urban	Caucasian	2	No	No
20005	Male	8/3rd	Mild/Moderate	No	Rural	Caucasian	3	No	No
20006	Male	10/5th	Mild/Moderate	Yes	Rural	Caucasian	1	No	Yes
40012	Male	10/5 th	Severe	Yes	Rural	Caucasian	3	No	No
50002	Male	10/6 th	Severe	No	Rural	Caucasian	1	No	Yes

1 = No services. 2 = Yes services direct contact between hospital and school. 3 = Parent mediated transition service.

Reprinted from *NeuroRehabilitation*, 42(3), Todis B, McCart M, & Glang A. Hospital to school transition following traumatic brain injury: A qualitative longitudinal study, 269-276, Copyright (2018), with permission from IOS Press. The publication is available at IOS Press through <http://dx.doi.org/10.3233/NRE-172383>

provided, and whether the student attended school in an urban or rural school district.

Students with TBI Participant information is presented in Table 1 and Sample Characteristics of Students with TBI is presented in Table 2. As depicted in the tables, most students were male (81%) and white (95%). The majority had experienced a severe TBI (71%) and had received inpatient rehabilitation services (76%). Parent demographic information is unavailable. Additional details about recruitment are presented in our initial paper (Todis et al., 2018). The study was reviewed and approved by the institutional review board of Western Oregon University.

2.2. Interviews and Observations

Parents were interviewed at least annually and participated in the study for an average of 4 years (range 0 to 6). We also interviewed educators nominated by each family. Educators completed an average of 1.6 semi-structured interviews. A total of 30 school observations were conducted by the same field researchers who conducted the interviews. Participants were paid \$20 for each interview or observation. More information about the interview and observation protocols are provided in our earlier paper (Todis et al., 2018).

2.3. Data analysis

To conduct the analysis, we engaged in a reflexive thematic analysis (Braun & Clarke, 2006; Clarke & Braun, 2013), which allowed us to systematically code, draw connections, and explore emerging themes in the data. Transcripts and observation field notes were entered into Atlas.ti, a computer program that facilitates the analysis of qualitative data (Atlas.ti 8 Windows). Observational notes were analyzed using the same methods and contributed significantly to the triangulation of data. The first two authors read the transcripts and coded them inductively to determine some areas of interest, including hospital-school communication, parent-school communication, school performance, parent concerns, and school responses. Through weekly discussions, we created themes by analyzing relationships among the codes, and then we refined those themes. Both the coding and identification of themes were iterative processes. Then, we individually wrote brief case histories for each student to identify relevant information about the emerging themes. The case studies were compiled using interview data, observational data, and field notes from each participant. Patterns that appeared within and across cases were noted by the first author, compared with the original transcripts and field notes, and then refined by all authors.

Table 2
Sample characteristics of students with TBI

Total (n = 21)		
Sex		
Male	17	81%
Female	4	19%
Age at injury		
Mean	10.47	
Median	12	
Range	11	
SD	3.24	
Severity of Injury		
Mild/Moderate	6	29%
Severe	15	71%
Geographic		
Rural	12	57%
Urban	9	43%
Ethnicity		
White	20	95%
Hispanic	1	5%
Received rehabilitation		
Rehabilitation	16	76%
No rehabilitation	5	24%
Transition		
Did not receive transition services	5	24%
Received transition services	9	43%
Parent facilitated transition services	7	33%
IEP		
Yes	5	24%
No	16	76%
504		
Yes	7	33%
No	14	67%

Reprinted from *NeuroRehabilitation*, 42(3), Todis B, McCart M, & Glang A. Hospital to school transition following traumatic brain injury: A qualitative longitudinal study, 269-276. Copyright (2018), with permission from IOS Press. The publication is available at IOS Press through <http://dx.doi.org/10.3233/NRE-172383>

3. Results

We identified three key themes: lack of student tracking year to year, lack of educator training in both teacher preparation programs and while teaching, and conflicting views between educators and parents about the students' needs. These themes manifested primarily as specific examples of conflict between varying school personnel and parents. Some examples included arguments about accommodations, difficulties with consistency in communication, and varying beliefs about the effects of the injury on school performance that ultimately led to parent frustration. Observational notes were valuable in the triangulation of data and provided examples corroborating conflicting accounts by parents and school personnel. We provide quotes from interviews below; we do not include quotes from observational field notes.

3.1. Lack of tracking students with TBI year to year

Regardless of how knowledgeable school personnel were about a student's TBI when the student transitioned from the hospital, the teachers at the next grade level, just one year after the injury, were usually unaware that the student had experienced a TBI. This situation was compounded each year throughout the student's school career. When field researchers from our study called teachers to set up interviews, many teachers indicated that they had no idea the student had had a TBI. In some cases, they regretted that they had not had this information. (All names are pseudonyms.)

If I ever had another student with TBI who wasn't on an IEP, it would be nice if we could access information . . . , even just to check like, 'These are things that may be present in this student.' . . . I have 3 kids that are diabetic, and they need to check their blood sugar at various times, . . . and we were made aware that they might need to eat something and to allow that. I was very appreciative of that. 10050

When teachers did receive information about the TBI, it often lacked detail and did not provide helpful guidance, as this sixth-grade teacher recalls:

The first time I heard he had a head injury was at this time last year, in May, when we met with his fifth-grade teachers. And in passing, one of the teachers would describe each kid, maybe spend 30 to 60 seconds talking about their specific students that were coming to us. But the teacher said, 'Paul had a head injury a long time ago, but he's fine.' And that was all. 10029

Parents were frustrated by the lack of information-sharing from grade level to grade level, and they tended to think that educators should have taken more initiative to disseminate the information and follow through on planned accommodations. One father, whose son attended high school in a wealthy suburb, reported that two years after his son's injury, sophomore teachers were not told that he had a 504 plan. When the English teacher found out, she asked the student, "What accommodations was I supposed to be giving you?" The father concluded,

My sense is that the school district, these people are fairly busy. They're reasonably overwhelmed,

261 and they do anything they have to do, but they
262 don't volunteer a lot. 10064

263 A mother who was a substitute teacher at her son's
264 school noticed that there was nothing in the computer
265 that told the teachers that he had a 504 plan. She
266 commented,

267 These teachers, when they go to access
268 information about these students, they should
269 automatically know when they look into that com-
270 puter, there should be something flagging it so
271 they know they have a serious problem and that
272 these kids have 504s and that they need these
273 accommodations. That should not be my job.
274 10050

275 Although most parents initially assumed that
276 schools would take responsibility for tracking the
277 student's injury and accommodations, most of them
278 eventually took on that task themselves. When they
279 did not, they experienced negative consequences:

280 This is the first year that I didn't go in personally
281 and make sure all of his records and things were
282 sent over to the next school, and because I didn't,
283 I think that's some of the problem. The school
284 was not informed on Carl, and so it made it very
285 difficult for him to not get in trouble. They were
286 just figuring they were working with a 12-year-
287 old boy that had a learning problem . . . The vice
288 principal is where we had the problem because he
289 didn't seem to understand that Carl had an injury.
290 He just sees Carl as a brat. 10075

291 3.2. Lack of educator training in TBI

292 According to parents in this study, simply mak-
293 ing school personnel aware of a student's TBI was
294 of limited value because few teachers had received
295 training in TBI. As one mother put it, "They have
296 never heard of it, and they don't know what to do
297 with it." This same mother had other children receiv-
298 ing special education services in the same school and
299 felt that the school was better able to serve her other
300 children because they were familiar with "regular
301 developmental disabilities."

302 Some parents, like this mother, tried to fill in the
303 training gaps:

304 Believe it or not, a lot of teachers just don't under-
305 stand it. You would think that it would be part of
306 their training or something that they learn or do
307 along the way, but it's amazing how little they

308 know about brain injury . . . I took the opportu-
309 nity at the IEP meeting to teach them about it, and
310 they really truly did not understand. I think they
311 listened, but I don't think they get it. 10061

312 During interviews, field researchers asked teachers
313 directly whether they had had training or experience
314 with TBI. Only two teachers said that they had taught
315 another student with TBI or had a personal expe-
316 rience or a family member with TBI. One school
317 administrator, when asked whether the student's IEP
318 listed TBI as the eligibility category, said that she
319 was "not aware that TBI was an eligibility category
320 under IDEA." One teacher speculated that she had
321 not received training because no one could predict
322 the effects of TBI or how best to deal with each case:

323 [The information I received on TBI during my
324 training] was quite limited. I don't know if that's
325 the nature of TBI, that there aren't specific things
326 that you can teach about it and that it's case-by-
327 case, or if I'm just completely in the dark, but it's
328 one or the other . . . I know so little about it that
329 I don't even know what I want to know. 10118

330 A school counselor recalled that they didn't know
331 what to expect when a brain injury occurs:

332 The hospital said every brain injury is different,
333 and that was surprising to me. I'm usually a cut
334 and dry person. When something happens, I'm
335 like, can I expect this? or this? And I think that
336 was the scariest thing with Josh, was that I didn't
337 know. 10064

338 One teacher reflected on how getting a little infor-
339 mation about TBI gave her a new perspective on the
340 student and left her wanting more training:

341 Instead of getting mad at Serena for lying, now I
342 understand that this is part of the injury. I can just
343 kind of say, 'Ok,' and not put blame on anybody,
344 and now I can move past that. If she can't organize
345 information, that's real typical [of a student with
346 TBI], and it's like I need some class or workshop
347 to figure out how to help with that. 10092

348 Another teacher realized after working with a
349 student with TBI for some time that the kind of infor-
350 mation she thought she needed — facts about the
351 injury, which is what she learned from the hospital
352 transition materials — was not the information that
353 would be most helpful to her and her student:

354 Some days he is on, and some days he's not, and
355 sometimes he'll react to this and that. So, it's more

356 that [we need] strategies than the specifics of what
357 happened to him. Teachers don't really need to
358 know that. . . . We just need to know how to help
359 him. 10048

360 3.3. *Conflicting Views Between Parents and*
361 *Educators of Students' Needs*

362 In all but two of the cases, conflict eventually
363 arose between parents and educators over how to
364 address problems in school. The issue that most con-
365 founded both educators and parents was whether
366 a student's problems were attributable to the brain
367 injury or to some other factor —personality, adoles-
368 cence, or conditions such as ADHD — that pre-dated
369 the injury. One teacher recalled that, "Before the acci-
370 dent she was flighty, and she didn't have an edit
371 button. She still is." That teacher added that pre-
372 injury the student couldn't "organize information,
373 can't categorize," and that she had always had a
374 tendency to lie, especially about whether her home-
375 work was completed and to get out of doing required
376 tasks. "These things aren't new. They pre-date the
377 TBI."

378 One father reflected on the lack of school success
379 for his son:

380 It's not because he doesn't have the ability to do it;
381 it's because he doesn't have the motivation to do
382 it. And I'm wondering, really, really wondering if
383 that is from the injury. And then part of me thinks
384 well maybe it's just that he's a pre-teen. I don't
385 know. 10061

386 Although parents and educators shared this con-
387 cern and confusion, they often approached it from
388 different viewpoints: school staff became entrenched
389 in denying that the TBI was responsible for learn-
390 ing issues, and parents became equally committed to
391 getting the school to at least consider the TBI when
392 working with their children.

393 Even in the few cases in which students did well
394 academically after their TBI, parents came to have an
395 adversarial view of school personnel, as in the case
396 of this father, whose son was a successful student at
397 a high school in an affluent suburb:

398 [My son] could use speech therapy. I think they'd
399 pay for it if I raised a big enough stink. I would
400 rather not have that kind of relationship with the
401 school. I want more positive high-order things out
402 of them, like the AP classes. I have another son
403 coming in. I don't want him to have any more

404 trouble than is absolutely necessary, dealing with
405 those scoundrels. 10064

406 Another area of conflict between parents and edu-
407 cators involved differences in expectations. Parents,
408 based on their child's pre-injury performance, usually
409 had higher expectations for academic achievement
410 than did educators, who instead saw students with
411 TBI as unfocused and unmotivated and assumed they
412 had always been so. Teachers criticized parents for
413 having unrealistic expectations, and parents criticized
414 teachers for not taking the trouble to see who the child
415 was before the injury. One mother experienced this
416 when her child went to the brain injury rehabilitation
417 unit:

418 Rehab workers thought he was doing fine, but I
419 knew him before, and I knew how well he was
420 doing at school. I felt like they thought I was just
421 making things up. I mean what would the motive
422 be for that? Are you asking me to accept him the
423 way he is, knowing what he lost, because it's nor-
424 mal for a four-year-old to be this way? So, because
425 it's normal that a four-year-old doesn't know his
426 ABCs then it's something I'm supposed to be
427 okay with, even though he knew them before?
428 I need you to respect me and know that I knew
429 my child before this. I want him back where he
430 was, not where you think it's ok for him to be.
431 10118

432 **4. Discussion**

433 We identified three important issues in this longi-
434 tudinal study: (a) students' injuries are poorly tracked
435 over time; (b) educators lack knowledge about TBI;
436 and (c) parents and teachers have conflicting percep-
437 tions of student needs. These issues ultimately led to
438 parent frustration that eventually became conflict and
439 deteriorating relationships between parents and edu-
440 cators. This study's results show how those factors
441 contribute to the lack of success that many students
442 with TBI experience in school.

443 Screening, identifying, tracking, and monitoring
444 students with brain injury after they return to school
445 is widely recommended but not commonly imple-
446 mented (Dettmer et al., 2014; Lundine et al., 2020).
447 This lack of implementation likely contributes to the
448 low identification rate of students with TBI for spe-
449 cial education. A recent analysis suggests that only
450 32% of students with TBI who should receive spe-
451 cial education services are actually made eligible

under this category (Nagele et al., 2018). Indeed, Lundine et al. (2020) reported that 47% of students with moderate–severe TBI received no formal services when they returned to school. This issue could be at least partially remedied by a process for systematic communication between the medical and educational systems. The provision of hospital–school transition services is strongly correlated with identification for support services at school (Glang, Todis, et al., 2008; Todis et al., 2018). Education personnel, including administrators, who understand the long-term effects of TBI might actually implement tracking procedures and actively manage problems that arise over time (Dettmer et al., 2014; Gioia et al., 2015; Glang et al., 2015; Glang, Ylvisaker, et al., 2008; Ylvisaker et al., 1995).

However, even institutional or educator awareness that a student has been injured and is struggling does not automatically lead to the use of evidence-based interventions for brain injury (Todis et al., 2018). For example, if a student being tracked struggles to turn in their homework, a teacher who does not have training in TBI might default to the use of punitive consequences in the hope of correcting the problem behavior. If the problem stems from executive function deficits caused by TBI, punitive consequences are unlikely to positively affect the student’s rate of turning in homework. When educators use approaches inconsistent with the injury symptomology, both parents and educators become frustrated, and conflicting opinions and perspectives emerge. Conflicting perspectives, as our data show, exacerbate minor disagreements between parents and educators and can lead to misunderstandings and hard feelings that make communication difficult.

The most promising way to begin addressing these issues might be through professional development and training for educators. Training in TBI would allow educators to better understand parents’ perspectives and communicate with them knowledgeably and compassionately, bridging the gap between their views and the views held by parents (Kahn et al., 2018). If they were better trained to understand some of the unique effects of brain injury, educators might be more prepared to consistently provide correct accommodations to students and better communicate with parents (Glang et al., 2019; McCart et al., 2019). Training educators in TBI might also increase their awareness of students who have had a TBI and their unique needs, making tracking more likely to occur at both the school and individual teacher levels.

4.1. Limitations

This study represents the experiences and views of a small group of parents, teachers, and students from a single geographic area. Although participants represent a range of demographic variables, nearly all of the participants were white. Thus, the findings of this study might represent only the experiences of white families in the Pacific Northwest. Further research is needed to expand the geographic and racial demographics of the participants. Additionally, the observational component of the study focused on analyzing student interactions in the classroom, and thus the data collected through observation were not directly reported here. In the future, observations that attend specifically to the parent–educator relationship could be beneficial in the study of this dynamic.

4.2. Implications for practice

Although many areas of need remain to be addressed in service delivery for children with brain injury, educator training is the intervention area most likely to have an immediate and positive effect. Emerging evidence shows that teacher training improves educator knowledge about TBI and their applied skills and self-efficacy when working with students who have TBI (Glang et al., 2019; McCart et al., 2019). Improved educator knowledge, skills, and self-efficacy are theoretically linked to improved implementation of evidence-based practices for students with brain injury (Merle et al., 2022). Training for educators should occur within the school setting and include opportunities to practice evidence-based interventions, mentoring, feedback, and consultation with other trained educators (Glang et al., 2010). If educators are trained to use evidence-based interventions and student outcomes improve, parent satisfaction might also increase. Several comprehensive training models currently in use, such as Oregon TBI Teams (Glang et al., 2010) and BrainSteps (Brain Injury Association of Pennsylvania Inc., n.d.), incorporate features of effective professional development for educators. Both of those models focus on improving school outcomes for students with brain injury through educator professional development, consultation, and the improved use of evidence-based practices, and both programs have been evaluated using student academic, health, and social outcomes as criteria for success (Anderson et al., 2021; Ciccio, 2019).

5. Conclusion

This study's findings further support the need to design, evaluate, and implement evidence-based professional training programs to improve educator knowledge and practices for students with TBI.

Conflict of interest

This study was funded by grants from the U.S. Department of Education, Grants H32C040148 and H32C010113. Melissa McCart and Ann Glang are the co-directors of the Center on Brain Injury Research and Training and receive funding from federal agencies (CDC, NIDLLR) and state contracts (WA, AK) to conduct research and provide services in the area of brain injury. None of the other authors have any conflicts of interests to declare.

Acknowledgments

The authors have no acknowledgements.

References

- Anderson, D., Gau, J. M., Beck, L., Unruh, D., Gioia, G., McCart, M., Davies, S. C., Slocumb, J., Gomez, D., & Glang, A. E. (2021). Management of return to school following brain injury: an evaluation model. *International Journal of Educational Research, 108*. <https://doi.org/10.1016/j.ijer.2021.101773>
- Babikian, T., Merkley, T., Savage, R. C., Giza, C. C., & Levin, H. (2015). Chronic aspects of pediatric traumatic brain injury: Review of the literature [Article]. *Journal of Neurotrauma, 32*(23), 1849-1860. <https://doi.org/10.1089/neu.2015.3971>
- Brain Injury Association of Pennsylvania Inc. (n.d.). *BrainSTEPS*. <https://www.brainsteps.net/>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77-101. <https://doi.org/10.1191/1478088706qp063oa>
- Centers for Disease Control and Prevention. (2018). *Report to Congress: The Management of Traumatic Brain Injury in Children*. National Center for Injury Prevention and Control; Division of Unintentional Injury Prevention. <https://www.cdc.gov/traumaticbraininjury/pdf/reportstocongress/managementoftbiinchildren/TBI-ReporttoCongress-508.pdf>
- Centers for Disease Control and Prevention. (2019). *Surveillance Report of Traumatic Brain Injury-related Emergency Department Visits, Hospitalizations, and Deaths—United States, 2014*. Centers for Disease Control and Prevention, U.S. Department of Health and Human Services https://www.cdc.gov/traumaticbraininjury/pdf/TBI-Surveillance-Report-FINAL_508.pdf
- Ciccia, A. (2019). *School Transition After TBI (STATBI): Evaluating the Impact of Participation in a Formal Return-to-School Program for K-12 Students* (CE003164) [Grant]. Case Western University
- Clarke, V., & Braun, V. (2013). Teaching thematic analysis: Overcoming challenges and developing strategies for effective learning. *The psychologist, 26*(2), 120-123.
- Dennis, M., Simic, N., Bigler, E. D., Abildskov, T., Agostino, A., Taylor, H. G., Rubin, K., Vannatta, K., Gerhardt, C. A., Stancin, T., & Yeates, K. O. (2013). Cognitive, affective, and conative theory of mind (ToM) in children with traumatic brain injury. *Developmental cognitive neuroscience, 5*(0), 25-39. <http://dx.doi.org/10.1016/j.dcn.2012.11.006>
- Dettmer, J., Ettel, D., Glang, A., & McAvoy, K. (2014). Building statewide infrastructure for effective educational services for students with TBI: Promising practices and recommendations. *The Journal of Head Trauma Rehabilitation, 29*(3), 224-232
- Fuentes, M. M., Wang, J., Haarbauer-Krupa, J., Yeates, K. O., Durbin, D., Zonfrillo, M. R., Jaffe, K. M., Temkin, N., Tulskey, D., Bertisch, H., & Rivara, F. P. (2018). Unmet Rehabilitation Needs After Hospitalization for Traumatic Brain Injury. *Pediatrics, 141*(5). <https://doi.org/10.1542/peds.2017-2859>
- Gioia, G. A., Isquith, P. K., Guy, S. C., & Kenworthy, L. E. (2015). *Behavior Rating Inventory of Executive Function* (2 ed.). Psychological Assessment Resources, Inc.
- Glang, A., Ettel, D., Todis, B., Gordon, W. A., Oswald, J. M., Vaughn, S. L., Connors, S. H., & Brown, M. (2015). Services and supports for students with traumatic brain injury: Survey of State Educational Agencies. *Exceptionality, 23*(4), 211-224. <https://doi.org/10.1080/09362835.2014.986612>
- Glang, A., Todis, B., Sublette, P., Eagan-Brown, B., & Vaccaro, M. (2010). Professional development in TBI for educators: The importance of context. *The Journal of Head Trauma Rehabilitation, 25*(6), 426-432. <http://ovidsp.ovid.com/ovidweb.cgi?T=JS&CSC=Y&NEWS=N&PAGE=fulltext&D=yrovfil&AN=00001199-201011000-00004>
- Glang, A., Todis, B., Thomas, C. W., Hood, D., Bedell, G., & Cockrell, J. (2008). Return to school following childhood TBI: Who gets services? *NeuroRehabilitation, 23*(6), 477-486.
- Glang, A., Ylvisaker, M., Stein, M., Ehlhardt, L., Todis, B., & Tyler, J. (2008). Validated instructional practices: application to students with traumatic brain injury. *The Journal of Head Trauma Rehabilitation, 23*(4), 243-251.
- Glang, A. E., McCart, M., Slocumb, J., Gau, J. M., Davies, S. C., Gomez, D., & Beck, L. (2019). Preliminary efficacy of online traumatic brain injury professional development for educators: An exploratory randomized clinical trial. *The Journal of Head Trauma Rehabilitation, 34*(2), 77-86. <https://doi.org/10.1097/htr.0000000000000447>
- Haarbauer-Krupa, J., Ciccia, A., Dodd, J., Ettel, D., Kurowski, B., Lumba-Brown, A., & Suskauer, S. (2017). Service delivery in the healthcare and educational systems for children following traumatic brain injury: Gaps in care. *Journal of Head Trauma Rehabilitation, 32*(2), 77-86. <https://doi.org/10.1097/htr.0000000000000287>
- Hartman, L. R., Duncanson, M., Farahat, S. M., & Lindsay, S. (2015). Clinician and educator experiences of facilitating students' transition back to school following acquired brain injury: A qualitative systematic review. *Brain Injury, 29*(12), 1387-1399. <https://doi.org/10.3109/02699052.2015.1071431>
- Kahn, L. G., Linden, M. A., McKinlay, A., Gomez, D., & Glang, A. (2018). An international perspective on educators' perceptions

- of children with Traumatic Brain Injury. *NeuroRehabilitation*, 42(3), 299-309. <https://doi.org/10.3233/nre-172380>
- Keenan, H. T., Clark, A. E., Holubkov, R., Cox, C. S., & Ewing-Cobbs, L. (2018). Psychosocial and executive function recovery trajectories one year after pediatric traumatic brain injury: the influence of age and injury severity. *Journal of Neurotrauma*, 35(2), 286-296. <https://doi.org/10.1089/neu.2017.5265>
- Kennedy, E., Cohen, M., & Munafò, M. (2017). Childhood traumatic brain injury and the associations with risk behavior in adolescence and young adulthood: a systematic review. *The Journal of Head Trauma Rehabilitation*, 32(6), 425. <https://doi.org/10.1097/HTR.0000000000000289>
- Kirk, S., Fallon, D., Fraser, C., Robinson, G., & Vassallo, G. (2015). Supporting parents following childhood traumatic brain injury: a qualitative study to examine information and emotional support needs across key care transitions. *Child Care Health Dev*, 41(2), 303-313. <https://doi.org/10.1111/cch.12173>
- Lundine, J. P., Todis, B., Gau, J. M., McCart, M., Wade, S. L., Yeates, K. O., & Glang, A. (2020). Return to School Following TBI: Educational Services Received 1 Year After Injury. *The Journal of Head Trauma Rehabilitation, Publish Ahead of Print*. <https://doi.org/10.1097/htr.0000000000000591>
- Max, J. E., Troyer, E. A., Arif, H., Vaida, F., Wilde, E. A., Bigler, E. D., Hesselink, J. R., Yang, T. T., Tymofiyeva, O., & Wade, O. (2022). Traumatic brain injury in children and adolescents: psychiatric disorders 24 years later. *The Journal Of Neuropsychiatry And Clinical Neurosciences*, 34(1), 60-67. <https://doi.org/10.1176/appi.neuropsych.20050104>
- McCart, M., Glang, A. E., Slocumb, J., Gau, J., Beck, L., & Gomez, D. (2019). A quasi-experimental study examining the effects of online traumatic brain injury professional development on educator knowledge, application, and efficacy in a practitioner setting. *Disability and Rehabilitation* <https://doi.org/10.1080/09638288.2019.1578423>
- Merle, J. L., Thayer, A. J., Larson, M. F., Pauling, S., Cook, C. R., Rios, J. A., McGinnis, J. L., & Sullivan, M. M. (2022). Investigating strategies to increase general education teachers' adherence to evidence-based social-emotional behavior practices: A meta-analysis of the single-case literature. *Journal of school psychology*, 91, 1-26. <https://doi.org/10.1016/j.jsp.2021.11.005>
- Minney, M. J., Roberts, R. M., Mathias, J. L., Raftos, J., & Kochar, A. (2019). Service and support needs following pediatric brain injury: perspectives of children with mild traumatic brain injury and their parents. *Brain Injury*, 33(2), 168-182. <https://doi.org/10.1080/02699052.2018.1540794>
- Nagele, D. A., McCart, M., & Hooper, S. R. (2018). A call for implementing preferred practices for brain injury screening in youth to improve transition. *NeuroRehabilitation*, 42(3), 289-298. <https://doi.org/10.3233/nre-172386>
- Narad, M. E., Shultz, E., Yeates, K. O., Taylor, H. G., Stancin, T., & Wade, S. L. (2019). Behavioral health service utilization and unmet need after traumatic brain injury in childhood. *Journal of Developmental and Behavioral Pediatrics: JDBP*, 40(6), 451. <https://doi.org/10.1097/DBP.0000000000000681>
- On, Z. X., Ryan, N. P., Konjarski, M., Catroppa, C., & Stargatt, R. (2021). Social cognition in paediatric traumatic brain injury: A systematic review and meta-analysis. *Neuropsychology Review*, 1-22. <https://doi.org/10.1007/s11065-021-09488-2>
- Prasad, M. R., Swank, P. R., & Ewing-Cobbs, L. (2017). Long-term school outcomes of children and adolescents with traumatic brain injury. *The Journal of Head Trauma Rehabilitation*, 32(1), E24-E32. <https://doi.org/10.1097/htr.0000000000000218>
- Rivara, F. P., Koepsell, T. D., Wang, J., Temkin, N., Dorsch, A., Vavilala, M. S., Durbin, D., & Jaffe, K. M. (2012). Incidence of Disability Among Children 12 Months After Traumatic Brain Injury. *American journal of public health*, 102(11), 2074-2079. <https://doi.org/10.2105/ajph.2012.300696>
- Rivara, F. P., Vavilala, M. S., Durbin, D., Temkin, N., Wang, J., O'Connor, S. S., Koepsell, T. D., Dorsch, A., & Jaffe, K. M. (2012). Persistence of disability 24 to 36 months after pediatric traumatic brain injury: A cohort study. *Journal of Neurotrauma*, 29(15), 2499-2504.
- Sarmiento, K., Donnell, Z., Bell, E., & Hoffman, R. (2019). From the CDC: A qualitative study of middle and high school professionals' experiences and views on concussion: Identifying opportunities to support the return to school process [Article]. *Journal of Safety Research*, 68, 223-229. <https://doi.org/10.1016/j.jsr.2018.10.010>
- Thurman, D. J. (2016). The Epidemiology of Traumatic Brain Injury in Children and Youths: A Review of Research Since 1990. *Journal of Child Neurology*, 31(1), 20-27. <https://doi.org/10.1177/0883073814544363>
- Todis, B., Glang, A., Bullis, M., Ettl, D., & Hood, D. (2011). Longitudinal investigation of the post-high school transition Experiences of adolescents with traumatic brain injury. *Journal of Head Trauma Rehabilitation*, 26(2), 138-149.
- Todis, B., McCart, M., & Glang, A. (2018). Hospital to school transition following traumatic brain injury: A qualitative longitudinal study. *NeuroRehabilitation*, 42(3), 269-276. <https://doi.org/10.3233/nre-172383>
- Trainor, A. A., & Leko, M. (2014). Qualitative special education research: Purpose, rigor, and contribution. *Remedial and Special Education*, 35(5), 263-266.
- Williams, W. H., Chitsabesan, P., Fazel, S., McMillan, T., Hughes, N., Parsonage, M., & Tonks, J. (2018). Traumatic brain injury: a potential cause of violent crime? *The Lancet Psychiatry*, 5(10), 836-844. [https://doi.org/10.1016/S2215-0366\(18\)30062-2](https://doi.org/10.1016/S2215-0366(18)30062-2)
- Ylvisaker, M., Feeney, T., Maber-Maxivell, N., Meserve, N., Geary, P. J., & DeLorenzo, J. P. (1995). School reentry following severe traumatic brain injury: guidelines for educational planning. *Journal of Head Trauma Rehabilitation*, 10(6), 25-41.
- Zamani, A., Mychasiuk, R., & Semple, B. D. (2019). Determinants of social behavior deficits and recovery after pediatric traumatic brain injury. *Experimental neurology*, 314, 34-45. <https://doi.org/10.1016/j.expneurol.2019.01.007>