### Multimedia Appendix 2. Overview of studies

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<th>Authors, Year (country)</th>
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<tr>
<td>Ammerlaan et al. 2014 (Netherlands) [57]</td>
<td>To test the feasibility of an online and face-to-face self-management program</td>
<td>Mentees: 19 (aged 17-25; 84% female) Mentors: 2 peer leaders (aged 20-30 with rheumatic disease)</td>
<td>Rheumatic disease</td>
<td>Mixed methods (perceived usefulness, ease of use, acceptance, adherence) -Theory: Self-efficacy theory</td>
<td>-Password protected interactive website -6 weeks ; weekly group chat (clarified goals, activities on weekly theme) -Face-to-face version: 3 days -Dosage: 12 hours</td>
<td>-Both the online and face-to-face programs were feasible and helped youth to deal with daily life -Participants found the program easy to use</td>
<td>-Majority of sample was female (IV)</td>
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<tr>
<td>Ammerlaan et al. 2017 (Netherlands) [55]</td>
<td>To investigate the effectiveness of a web-based self-management intervention guided by peer trainers</td>
<td>Mentees: 67 (aged 16-25; 35 intervention (83% female; mean 19.2); 32 control (94% female; mean age 19.1) Mentors: young adults with rheumatic disease</td>
<td>Juvenile arthritis</td>
<td>RCT and qualitative (Dutch arthritis self-efficacy scale, self-management, quality of life, medication use, learning and adherence) -Theory: self-efficacy theory</td>
<td>-Web-based self-management intervention with peer trainers (6 weeks) -Group-based chat section (weekly), home exercises and discussion board -Dosage: approx. 12 hours</td>
<td>-No significant differences on self-efficacy, quality of life, and self-management between experimental and controls -Modeling and sharing were the most recognized themes in experimental group -Goals included improving and maintaining balance, setting and recognizing boundaries, communicating and coping</td>
<td>-High proportion of females -limited details of mentors (I)</td>
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<tr>
<td>Barnfather et al. 2011 (Canada) [13]</td>
<td>To determine the extent to which adolescents used an online peer support intervention</td>
<td>Mentees: 27 aged 12-18 (mean 14.6) n=27 (15 boys; 12 girls) Mentors: 5, same disability type; 22-39 years (3 women; 2 men)</td>
<td>Cerebral palsy, spina bifida</td>
<td>Survey and interviews (satisfaction, use and usefulness, social support) -Theory: social support theory</td>
<td>-6-month online discussion forums -Met once/week in group-based chat room for 1-1.5 hours per session for 25 sessions; email and message boards -Ongoing monitoring and support -Dosage 25-37.5 hours</td>
<td>-Two thirds of participants thought the intervention was fun -Factors influencing the perceived utility of the intervention included typing speed, cognitive skills and need for support -Females were significantly more</td>
<td>-Convenience sample (IV)</td>
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<tr>
<td>Reference</td>
<td>Methodology</td>
<td>Objectives</td>
<td>Mentees</td>
<td>Mentors</td>
<td>Measures</td>
<td>Theory</td>
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<td>Bell 2010 (US) [68]</td>
<td>To explore the role of mentoring youth with blindness</td>
<td>Mentees: 49 (Aged 16-26; mean 21.1; 57% females)</td>
<td>Legal blindness</td>
<td>Pre-post survey (career decision self-efficacy; Miller Hope Scale; social responsibility)</td>
<td>Face-to-face activities; phone calls, e-mails, instant messaging (one-to-one)</td>
<td>Dosage: avg. 8 hours per month</td>
<td>Youth who participated in the project had significant increases in career decision-making efficacy (large effect), positive personal hope for the future and positive attitudes about blindness (large effect)</td>
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<tr>
<td>Burgstahler &amp; Cronheim 2001 (US) [64]</td>
<td>This study explores whether computer-mediated communication can be used to initiate and sustain peer-mentor relationships in people with disabilities</td>
<td>Mentees: 49 high school students interested in STEM (20 females; 29 males)</td>
<td>Various (vision, hearing, learning)</td>
<td>Survey and focus groups (frequency of communication; what they liked and didn’t like)</td>
<td>Do-IT (Disabilities, opportunities, internet working and technology)</td>
<td>Dosage: unknown</td>
<td>Peer-peer and mentor-protégé relationships perform similar functions; however, peer-peer relationships were more personal</td>
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<tr>
<td>Burgstahler &amp; Doyle 2005 (US) [70]</td>
<td>To explore gender differences in computer-mediated communication between youth with disabilities and adult mentors</td>
<td>Mentees: 40 (60% male)</td>
<td>Various types</td>
<td>Content analysis of email messages</td>
<td>Face-to-face and online (e-mail; part of larger DO-IT (Disabilities, opportunities, interNetworking and technology) program</td>
<td>Dosage: approx. 2 years</td>
<td>Males sought and provided information about technology and the internet, Females communicated more frequently overall and shared more personal information</td>
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<tr>
<td>Cantrell et al. 2010 (US) [61]</td>
<td>To explore the role of e-mentorship in virtual environments</td>
<td>Mentees: 8 youth with pediatric transplants</td>
<td>Pediatric transplant</td>
<td>Mixed methods (qualitative and online log data; electronic socio-emotional support theory)</td>
<td>Zora virtual world offering psychoeducational support</td>
<td>Dosage: twice a week for 14 weeks (facilitated group-based activities)</td>
<td>They discussed bullying, physical appearance, school and pain management</td>
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<table>
<thead>
<tr>
<th>Study</th>
<th>Title</th>
<th>Objective</th>
<th>Methodology</th>
<th>Participants</th>
<th>Measures</th>
<th>Results</th>
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</table>
| Cohen & Light 2009 (US) [65] | To develop, implement and conduct a preliminary evaluation of a small-scale mentorship program for youth who use AAC | **Mentees:** 4 (2 males, 2 females; mean age 18.2)  
**Mentors:** 4 adult AAC users (3 males, 1 female, mean age 36.2) | Content analysis of email messages, frequency and length of messages and goals attained; satisfaction survey | - Email communication (one-to-one; paired with mentor for 6 months); given instructions on how to structure the relationship  
- Researchers prompted to communicate regularly  
- Dosage: ranged from 10-21 weeks | - Email communication may be effective in easing the transition of younger users of AAC  
- All pairs maintained consistent communication during the program  
- The frequency and length of communication may have been influenced by availability of mentor and quality of the match | |
| Gorter et al. 2015 (Canada) [56] | To assess use, utility and impact of transition intervention designed to support and empower self-management in youth with chronic conditions during transition to adult care | **Mentees:** 50 (42% male, mean age 17.9)  
**Mentors:** Occupational therapist with expertise in transition (identity, age and gender kept anonymous from mentees) | 4-year mixed-method prospective cohort (frequency of use, utility, impact of transition interventions, goals, interviews) | - Youth KIT (organizational tool that includes goal setting activities) and online transition mentor (one-to-one and group-based chats and email)  
- Exposure: 12-47 months  
- Dosage: total - dosage unknown | 85% of youth used the KIT at least once  
- 40% of participants engaged in chats with the mentor  
- 82% logged in at least once pre-transfer  
- Perceived utility of the intervention was modest | No control group  
- Limited details on sampling strategy (II) |
| Gregg et al. 2016 (US) [62] | To understand the provision of e-mentoring to support the educational persistence of students with disabilities at college | **Mentees:** 4 (3 females, 1 male)  
**Mentors:** 4 (2 males, 2 females); faculty, graduate students, business leaders with expertise in STEM (completed 2 online mentor training modules) | - Qualitative case study | - Mentors were matched based on interest and learning style  
- Virtual mentoring (digital voice or text-based communication platforms; virtual reality avatars)  
- Required to meet at least 10 times per semester, complete project modules; one-to-one  
- Dosage: - Virtual environments and social media tool use varied depending on context, accessibility and practical considerations  
- STEM learning and emotional supports were enhanced when embedded in the practice of e-mentoring  
- 5 persistent | - Small sample  
- Mentored pairs meet “at least 10 times per semester”, so no control over dosage per pair  
- Limited detail on interview data collection and analysis (IV) |
<table>
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<tr>
<th>Study</th>
<th>To investigate the effectiveness of virtual mentoring for enhancing the persistence of secondary and post-secondary students with disabilities in STEM</th>
<th>Mentees: 189 (42% had mobility/orthopedic impairment)</th>
<th>Mentors: 33 (faculty, grad students, teachers, business leaders with expertise in STEM; 1 had a disability)</th>
<th>Survey, online log data (aspiration, self-determination, self-advocacy, science self-efficacy, math self-efficacy; self-determination theory)</th>
<th>-4-year e-mentoring program (digital voice communication platform or text-based)</th>
<th>-Improved self-determination and self-advocacy</th>
<th>-Virtual mentoring enhances the persistence of students with disabilities</th>
<th>-Math self-efficacy and math interest improvement were noted for majority of participants</th>
<th>-Greatest improvements for females and minority students</th>
<th>-Only 78% completed both the pre-post survey</th>
<th>-Mentored pairs meet “at least 10 times per semester”, so no control over dosage per pair (IV)</th>
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<td>Keane &amp; Russell 2014 (US) [72]</td>
<td>Mentees: 1 (male)</td>
<td>Case study</td>
<td>-Cloud (Google app); Google voice (6 months) (one-to-one)</td>
<td>-Dosage: unknown</td>
<td>-Developed efficient coaching process adaptable for all student who need assistant at a distance</td>
<td>-Facilitated student’s understanding of what changes were needed to school work</td>
<td>-Limited description of the role of the mentor</td>
<td>-Limited detail on interview data collection and analysis (IV)</td>
<td>-Did not have control group (level IV)</td>
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<td>Kim &amp; Choi 2017 (Korea) [77]</td>
<td>Mentees: 16 high school students (aged 17-21, mean 17.8; 37.5% male)</td>
<td>Mentors: 16 university students with disabilities;</td>
<td>Pre-post survey and interviews (career decision self-efficacy scale)</td>
<td>-8 sessions and online training (one-to-one email and online chat) for 1 hour per week</td>
<td>-Significant improvements in career decision self-efficacy at the end of the program</td>
<td>-Participants had better understanding of colleges and majors they were</td>
<td>-Did not have control group (level IV)</td>
<td>-Limited description of the role of the mentor</td>
<td>-Limited detail on interview data collection and analysis (IV)</td>
<td>-Did not have control group (level IV)</td>
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<tr>
<td>Decision</td>
<td>Self-efficacy and college preparation</td>
<td>Aged 20-27; mean age 22.8; 42.7% male</td>
<td>Received training</td>
<td>Interested in, improved knowledge about admissions procedures</td>
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**Kim-Rupnow & Burgstahler 2004 (US) [69]**

To explore perceptions of students with disabilities regarding the value of technology-based support activities on postsecondary education and employment

**Mentees:** 75 (52% male; aged 18-26; majority under 23)  
**Mentors:** Adults with experience in STEM

**Retrospective survey** (motivations for post-secondary, employment, social skills, advocacy skills, self-esteem)  
- **Theory:** n/a  
- **Dosage:** approx. 2 years  
- **Participants** reported short and long-term growth in their level of preparation for college and employment and increased self-advocacy and social skills  
- **Unclear** whether mentors had a disability  
- **No control group** (IV)

**Kohut et al. 2016 (Canada) [73]**

To develop and test the feasibility, acceptability and impact of the iPeer2Peer program

**Mentees:** 28 (aged 12-18, mean 14.8; 93% female; 12 intervention, 16 control)  
**Mentors:** Trained youth with chronic pain, aged 18-25 who have learned to successfully manage their pain

**Chronic pain** (neuropathic, widespread, abdominal, secondary to chronic disease)  
**Pilot RCT, wait-list controls**  
- **Feasibility, adherence, satisfaction, recalled pain inventory, daily functioning (conceptual framework for peer support in health care)**  
- **10 Skype video calls** (one-to-one) (20-30 minutes) over 8 weeks  
- **Modelling and reinforcement by peers**  
- **Dosage:** 2.6 to 5 hours  
- **The iPeer2Peer program was feasible and acceptable provided that adolescents were given more time to complete all the calls**  
- **Youth in the intervention had significant improvement in self-management skills and coping efforts were more successful.**  
- **Intensive intervention that requires significant time commitment**  
- **Small sample size**  
- **Mostly female sample** (IV)

**Kohut et al. 2018 (Canada) [75]**

To determine the topics of discussion during open-ended peer mentoring between youth with chronic illness

**Mentees:** 28 (93% female; mean age 14.8; 57% with juvenile arthritis)  
**Mentors:** 11 (90% female; 53% with juvenile arthritis; mean 24.5 years old)

**Qualitative content analysis** (conceptual framework for peer support in health care)  
- **52 calls** (7 mentor-mentee pairings) (part of pilot RCT)  
- **Asked to meet 10 times via Skype (one-to-one) calls over the course of 2-3 months**  
- **Dosage:** unknown  
- **Themes included:** illness impact (relationships, school/work, self-identity, personal stories), self-management (adherence, transition to adult care, coping), non-illness related  
- **Majority female participants** (IV)
<table>
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<th>Methodology</th>
<th>Evaluation</th>
<th>Findings</th>
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<tr>
<td>Kramer et al. 2018 (US) [71]</td>
<td>Mentees: 42 (aged 14-22; 61% male) Mentors: 9 (with a disability; mean age 22.6; 4 males; 5 females; mentors received training and ongoing supervision)</td>
<td>Mentors provided informational, appraisal and emotional support to adolescents</td>
<td>One-to-one mentoring (instrumental e-mentoring calls, email, online chat) -12 weeks, 8 calls which paralleled group session curriculum -31 peer-mentoring dyads -Dosage: unknown</td>
<td>Mentees attended 87% of calls and engaged during 94% of call objectives (engaged in practice problem-solving) -Mentors achieved 87% of objectives -Significant relationship between use of mentoring supports and fidelity -Intervention is suitable and acceptable to mentees with disabilities -Program was labour intensive and expensive (IV)</td>
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<tr>
<td>Mastropieri et al. 2001 (US) [67]</td>
<td>Mentees: 17 (82% male)</td>
<td>Email (one-to-one) -Dosage: 3 months</td>
<td>-Significant improvement in written communication (# of sentences) from beginning to end of mentoring</td>
<td>-Little information given about the mentors -Did not use standardized measures (IV)</td>
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<tr>
<td>Narad et al. 2018 (US) [60]</td>
<td>Mentees: 4 (mean age 15; 3 females, 1 male) Mentors: 4</td>
<td>Feasibility study pre-post (social and behavior functioning; feasibility and acceptability) -Theory: n/a</td>
<td>-Mobile app, online didactic information (interactive website) and peer coaching; -Met weekly with mentor (one-to-one) via video conference (Skype) developed goals and plans to achieve them -4 weeks -Dosage: 1 hour a</td>
<td>-SPAN program was well received (feasible and good utility) -Youth used the app to define and achieve goals -Youth self-report measures medium to large effect -Small sample (IV)</td>
</tr>
<tr>
<td>Study</td>
<td>Design/Methodology</td>
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<td>Interventions</td>
<td>Findings/Results</td>
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| Parkyn & Coveney 2013 (Australia) [58] | To explore the value of “MD Mafia” online group for youth with muscular dystrophy | **Mentees:** 12 (males aged 14-17; 12 parents)  
**Mentors:** adult (male occupational therapist) | Muscular dystrophy  
Qualitative content analysis of discussion forum  
-Theory: symbolic interaction theory  
-Password protected online interactive group activities and discussion forum matched to youth’s age, interest and skills (1 hour x 4 times/year)  
-Dosage: 4 hours | Intervention has a strong collective identity (reflecting ideals of masculinity)  
-Group provides opportunity for socialization in a safe environment  
-Lack of details about the intervention  
-all male sample (IV) |
| Shpigelman et al. 2009 (Israel) [19] | To evaluate an e-mentoring intervention program providing social and emotional support for youth with disabilities | **Mentees:** 13 (aged 15-20; mean 17.5; 5 males; 8 females)  
**Mentors:** 7 (2 males; 5 females with a disability; received 2-hour training; supervised by researchers) | Physical, emotional, behavioural  
Qualitative content analysis  
-Theory: electronic socio-emotional support (ESES)  
-Youth were matched based on gender, shared interests and hobbies (one-to-one)  
-Intervention involved 4 stages (personal acquaintance, moderated communication, online activities, saying goodbye) taking 8 months  
-Dosage: send at least 2 messages per week via email for approx. 8 months. | Findings support the usability and utility of an e-mentoring intervention and the ESES conceptual framework  
-Mentors sent mean of 38.8 messages compared to mean of 27.3 messages sent by mentees  
-Themes of the messages included perceptions, attitudes and experiences of mentors, the e-mentoring process, participants role in the process, feelings experienced and duration of the intervention  
-Higher proportion of females  
-Small sample  
-No comparison group (IV) |
| Shpigelman & Gill 2013 (US) [47] | To explore the characteristics of unsuccessful e-mentoring relationships for youth with disabilities | **Mentees:** 6 aged 15-20  
**Mentors:** 6 aged 22-28; 67% female with a disability; Serve as role models; share life experiences and focus on positive | Developmental, physical, emotional, behavioral  
Qualitative thematic analysis  
-Theory: n/a  
-E-mentor intervention to provide social and emotional support for youth with disabilities through asynchronous (one-to-one) e-mail for 8 months (at least 2 messages per week and meet | Unsuccessful mentoring was associated with a more formal style and distant tone; successful mentoring included informal and supportive style  
-Training of mentors not mentioned  
-Small, subsample (IV) |
<table>
<thead>
<tr>
<th>Study</th>
<th>Design/Participants</th>
<th>Methods</th>
<th>Findings</th>
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</table>
| Stewart et al. 2011 (Canada) [59] | To explore the perceptions of adolescents with physical disabilities in an online intervention  
**Mentees:** 22 (aged 12-18)  
**Mentors:** 5 (3 female, 2 male aged 22-39 with cerebral palsy or spina bifida)  
**Physical disability (cerebral palsy, spina bifida)**  
Survey and interviews (loneliness and social dissatisfaction scale, self-report coping scale, sense of community scale, self-perception profile and children’s inventory of social support)  
-Theory: n/a | -Met weekly online in group-based chat rooms for 60-90 minutes for 25 group sessions over 6 months  
-Topics included independent living, health concerns, bullying, making friends, career planning, travelling, sports and building relationships  
-Dosage: 25 to 37.5 hours | -More contact with other teens; decreased loneliness;  
-Significant increased acceptance and confidence; increase in sense of community  
-On average youth attended 8.5 group sessions |
| Stinson et al. 2016 (Canada) [74] | To examine the feasibility and acceptability of an online peer mentoring program (iPeer2Peer) for youth with juvenile arthritis  
**Mentees:** 30 (aged 12-18, mean 14.3; 97% female)  
**Mentors:** 6 (aged 16-25, mean 18.8, 83% female who successfully manage their juvenile arthritis, screened and trained (2.5 days))  
**Juvenile arthritis**  
Pilot RCT (wait-list controls) (feasibility, acceptability, self-management, self-efficacy, pain, social support and quality of life)  
-Theory: n/a | -Connected 10 times (20-30 minutes/time) over 8 weeks using Skype (one-to-one) video calls  
-Dosage: 2.5 to 5 hours | -Half of the participants completed the 10 calls within 8 weeks  
-Average call length was twice the required amount  
-Participants reported satisfaction with the program and would recommend to their peers  
-Mean engagement level was 8.53/10  
-Improvement in perceived ability to manage arthritis compared to controls  
-There is a need for flexibility and individualization |
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<thead>
<tr>
<th>Mentee Description</th>
<th>Mentors Description</th>
<th>Pre-post Survey</th>
<th>Dosage</th>
<th>Notes</th>
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</table>
| Mentees: 97
(secondary and post-secondary students) | Mentors: “various backgrounds” | Pre-post survey
(communication methods, interactions, self-advocacy, self-determination, intention to persist, science and math anxiety) | Dosage: unknown | -Participants reported higher frequency of using communication platforms that they are already acquainted with including e-mail, telephone, SMS text message -Improvements in internal characteristics related to persistence in STEM education -Self-advocacy had the highest gain |
| Various (physical, sensory, ASD, mobility, other) | -Georgia STEM accessibility alliance uses virtual worlds, online and smartphone technologies; individual and group activities -4 years (surveyed twice each year) | -No control group -Limited socio-demographic details of participants -Limited details on who the mentors are and what training they received (IV) |

*a Note: only the findings related to the objectives of this review were reported.*