

Summary of Roots of Empathy Research 2001- 2017 (Prepared August 20, 2018)

<u>Attribute studied</u>	<u>Country</u>	<u>Year</u>	<u>Study Design</u>	<u>Number of Subjects</u>	<u>Study Outcome</u>	<u>References</u>
Aggression/ Bullying (i.e., physical aggression, relational aggression, proactive aggression, indirect aggression)	Switzerland	2015 - 2017	Cluster, non-randomized matched-control	ROE program: 187 Control: 249	Significant decrease in aggression compared with controls. Results were maintained one year after program completion	Latsch, D., Stauffer, M., & Bollinger, M. (2017). Evaluation of the Roots of Empathy program in Switzerland, years 2015 to 2017. Full Report. Bern: Bern University of Applied Science.
	Manitoba, Canada	2002 - 2005	Cluster, randomized control	ROE program: 445 Control: 315	Significant decrease in teacher-rated physical aggression as well as indirect aggression compared with controls, both immediately and up to three years after program completion	Santos, R.G., Chartier, M.J., Whalen, J.C., Chateau, D., & Boyd, L. (2011). Effectiveness of school-based violence prevention for children and youth: Cluster randomized controlled field trial of the Roots of Empathy program with replication and three-year follow-up. <i>Healthcare Quarterly</i> , 14, 80-90.
	Vancouver and Toronto Canada	2001 - 2002	Cluster, non-randomized matched-control	ROE Program: 306 Control: 279	Significant decrease in teacher-rated proactive and relational aggression compared with controls	Schonert-Reichl, K. A., Smith, V., Zaidman-Zait, A., & Hertzman, C. (2012). Promoting children's prosocial behaviours in school: Impact of the "Roots of Empathy" program on the social and emotional competence of school-aged children. <i>School Mental Health</i> 4(1), 1-12.
	Western Australia	2007	Qualitative, phenomenological study, using purposive sampling	8 teachers whose classes had ROE programs	Decrease in bullying and aggression in teachers' classrooms	Cain, G., & Carnellor, Y (2008). Roots of Empathy: A research study on its impact on teachers in Western Australia. <i>Journal of Student Wellbeing</i> , 2(1), 52-73.

Aggression/ Bullying (i.e., physical aggression, relational aggression, proactive aggression, indirect aggression)	Scotland	2014 - 2015	Cluster, non-randomized matched-control; plus qualitative interviews with parents, teachers and stakeholders	Quantitative: ROE Program: 352 Control: 309 Qualitative: Parents: 13 Stakeholders: 24 Teachers: 29	Aggression decreased in intervention classes, increased in control classes. Qualitative study noted positive effect on levels of aggression.	Wrigley, J., Makara K., Elliot D., (2015). Evaluation of Roots of Empathy in Scotland 2014-2015, Final Report for Action for Children (unpublished), Executive Summary.
	North Lanarkshire, Scotland	2011-2012	Cluster, non-randomized control; video observation in 3 schools	ROE Program: 419 Control: 366	Significantly decreased aggressive behaviour compared with controls. Also observed reduction in aggression in video observation.	MacDonald, A., Bell, P., McLafferty, M., McCorkell, L., Walker, I., Smith, V., Balfour, A., & Murphy, P. (2013). Evaluation of the Roots of Empathy Programme by North Lanarkshire Psychological Service. North Lanarkshire Psychological Service Research (unpublished).
	Perth, Western Australia	2005	Cluster, non-randomized control	ROE program: 306 Control:132	Significantly decreased aggressive behaviour compared with controls	Kendall, G., Schonert-Reichl, K. A., Smith, V., Jacoby, P., Austin, R., Stanley, F., & Hertzman, C. (2006). The evaluation of Roots of Empathy in Western Australian Schools. Report prepared for the Department of Education and Training, Western Australia. Telethon Institute for Child Health Research.
	New Zealand	2007 - 2008	Cluster, non-randomized matched-control	ROE Program: 265 Control: 243	Decrease in anti-social behaviour. No observable difference in aggressive behaviour between groups	Ward, L., & Armstrong, C. (2009, June). <i>Roots of Empathy Final Report</i> . Cognition Consulting (Report prepared for New Zealand ministries of Social Development, Education & Health.

Empathy	Switzerland	2015 - 2017	Cluster, non-randomized matched-control	ROE program: 187 Control: 249	Significant increase in empathy compared with controls. Results were maintained one year after program completion (or may have slightly increased)	Latsch, D., Stauffer, M., & Bollinger, M. (2017). Evaluation of the Roots of Empathy program in Switzerland, years 2015 to 2017. Full Report. Bern: Bern University of Applied Science.
	North Lanarkshire, Scotland	2011-2012	Cluster, non-randomized control; video observation in 3 schools	ROE Program: 419 Control: 366	Significantly increased both cognitive and emotional empathy compared with controls	MacDonald, A., Bell, P., McLafferty, M., McCorkell, L., Walker, I., Smith, V., Balfour, A., & Murphy, P. (2013). Evaluation of the Roots of Empathy Programme by North Lanarkshire Psychological Service. North Lanarkshire Psychological Service Research (unpublished).
	Scotland	2014 - 2015	Cluster, non-randomized matched-control; plus qualitative interviews with parents, teachers and stakeholders	Quantitative: ROE Program: 352 Control: 309 Qualitative: Parents: 13 Stakeholders: 24 Teachers: 29	Significant increase in affective empathy compared with controls. No difference in cognitive empathy. Qualitative study showed teachers noted increase in both affective and cognitive empathy.	Wrigley, J., Makara K., Elliot D., (2015). Evaluation of Roots of Empathy in Scotland 2014-2015, Final Report for Action for Children (unpublished), Executive Summary
Prosocial Behaviour	Vancouver and Toronto Canada	2001 - 2002	Cluster, non-randomized matched-control	ROE Program: 306 Control: 279	Significant increase in teacher-rated prosocial behaviour compared with controls	Schonert-Reichl, K. A., Smith, V., Zaidman-Zait, A., & Hertzman, C. (2012). Promoting children's prosocial behaviours in school: Impact of the "Roots of Empathy" program on the social and emotional competence of school-aged children. School Mental Health 4(1), 1-12.
	Switzerland	2015 - 2017	Cluster, non-randomized matched-control	ROE program: 187 Control: 249	Significant increase in prosocial behaviour compared with controls	Latsch, D., Stauffer, M., & Bollinger, M. (2017). Evaluation of the Roots of Empathy program in Switzerland, years 2015 to 2017. Full Report. Bern: Bern University of Applied Science.

Prosocial Behaviour	Ontario, Canada	2018	Cluster, non-randomized matched-control, plus qualitative questions for students	ROE program: 91 Control: 128	Significant increase in prosocial behaviour compared with control group	Bayrami, L., Bagheri, L. (2018). Resilience, Well-being, and Happiness: The Impact of the Roots of Empathy Program on Students in Ontario (unpublished), Final Report for the Ontario Ministry of Education.
	Scotland	2014 - 2015	Cluster, non-randomized matched-control; plus qualitative interviews with parents, teachers and stakeholders	Quantitative: ROE Program: 352 Control: 309 Qualitative: Parents: 13 Stakeholders: 24 Teachers: 29	Increase in prosocial behaviour compared with control group. Qualitative study showed more caring, sharing and supportive behaviour.	Wrigley, J., Makara K., Elliot D., (2015). Evaluation of Roots of Empathy in Scotland 2014-2015, Final Report for Action for Children (unpublished), Executive Summary.
	North Lanarkshire, Scotland	2011-2012	Cluster, non-randomized control; video observation in 3 schools	ROE Program: 419 Control: 366	Significant increase in teacher-rated prosocial behaviour compared with controls	MacDonald, A., Bell, P., McLafferty, M., McCorkell, L., Walker, I., Smith, V., Balfour, A., & Murphy, P. (2013). Evaluation of the Roots of Empathy Programme by North Lanarkshire Psychological Service. North Lanarkshire Psychological Service Research (unpublished).
	Perth, Western Australia	2005	Cluster, non-randomized control	ROE program: 306 Control:132	Significantly increased prosocial behaviour compared with controls	Kendall, G., Schonert-Reichl, K. A., Smith, V., Jacoby, P., Austin, R., Stanley, F., & Hertzman, C. (2006). The evaluation of Roots of Empathy in Western Australian Schools. Report prepared for the Department of Education and Training, Western Australia. Telethon Institute for Child Health Research.
	Western Australia	2007	Qualitative, phenomenological study, using purposive sampling	8 teachers whose classes had ROE programs	Increase in prosocial behaviour in teachers' classrooms	Cain, G., & Carnellor, Y (2008). Roots of Empathy: A research study on its impact on teachers in Western Australia. <i>Journal of Student Wellbeing</i> , 2(1), 52-73.

Prosocial Behaviour	Manitoba, Canada	2002 - 2005	Cluster, randomized control	ROE program: 445 Control: 315	Significant increase in teacher-rated prosocial behaviour compared with controls. No difference in prosocial behaviour at three years.	Santos, R.G., Chartier, M.J., Whalen, J.C., Chateau, D., & Boyd, L. (2011). Effectiveness of school-based violence prevention for children and youth: Cluster randomized controlled field trial of the Roots of Empathy program with replication and three-year follow-up. <i>Healthcare Quarterly</i> , 14, 80-90.
	New Zealand	2007 - 2008	Cluster, non-randomized matched-control	ROE Program: 265 Control: 243	Increase in prosocial behaviour. Decrease in anti-social behaviour	Ward, L., & Armstrong, C. (2009, June). <i>Roots of Empathy Final Report</i> . Cognition Consulting (Report prepared for New Zealand ministries of Social Development, Education & Health.
	Northern Ireland	2011 - 2012	Cluster randomized control plus qualitative interviews with teachers, parents, pupils and other stakeholders	Quantitative: ROE Program: 695 Control: 583 Qualitative: Parents: 13 Stakeholders: 24 Teachers: 29	Significant increase in prosocial behaviour and reduction in difficult behaviour	Connolly P. Miller S, Kee F, Sloan S, Gildea A, McIntosh E, Boyer N, Bland M. (2018) A cluster randomized controlled trial and evaluation and cost-effectiveness analysis of the Roots of Empathy schools-based program for improving social and emotional well-being outcomes among 8- to 9-year-olds in Northern Ireland. <i>Public Health Research</i> 6(4).
Resilience	Ontario, Canada	2018	Cluster, non-randomized matched-control, plus qualitative questions for students	ROE program: 91 Control: 128	Resilience significantly increased in intervention classes, decreased in control classes. Qualitative study suggests a positive effect on resilience.	Bayrami, L., Bagheri, L. (2018). <i>Resilience, Well-being, and Happiness: The Impact of the Roots of Empathy Program on Students in Ontario</i> (unpublished), Final Report for the Ontario Ministry of Education.
Emotional Regulation	Perth, Western Australia	2005	Cluster, non-randomized control	ROE program: 306 Control: 132	Enhanced ability to manage emotions positively	Kendall, G., Schonert-Reichl, K. A., Smith, V., Jacoby, P., Austin, R., Stanley, F., & Hertzman, C. (2006). <i>The evaluation of Roots of Empathy in Western Australian Schools</i> . Report prepared for the Department of Education and Training, Western Australia. Telethon Institute for Child Health Research.

Well-being	Ontario, Canada	2018	Cluster, non-randomized matched-control, plus qualitative questions for students	ROE program: 91 Control: 128	Significant decrease in total difficulty (emotional symptom, conduct problem, hyperactivity, and peer problems), whereas the control increased. ROE students significantly increased in happiness on one of two measures.	Bayrami, L., Bagheri, L. (2018). Resilience, Well-being, and Happiness: The Impact of the Roots of Empathy Program on Students in Ontario (unpublished), Final Report for the Ontario Ministry of Education.
Knowledge of Infant Development	North Lanarkshire, Scotland	2011-2012	Cluster, non-randomized control; video observation in 3 schools	ROE Program: 419 Control: 366	ROE students had a greater understanding of infant development	MacDonald, A., Bell, P., McLafferty, M., McCorkell, L., Walker, I., Smith, V., Balfour, A., & Murphy, P. (2013). Evaluation of the Roots of Empathy Programme by North Lanarkshire Psychological Service. North Lanarkshire Psychological Service Research (unpublished).
	New Zealand	2007 - 2008	Cluster, non-randomized matched-control	ROE Program: 265 Control: 243	Increase in student knowledge of human development and infant safety	Ward, L., & Armstrong, C. (2009, June). <i>Roots of Empathy Final Report</i> . Cognition Consulting (Report prepared for New Zealand ministries of Social Development, Education & Health).
	Switzerland	2015 - 2017	Cluster, non-randomized matched-control, plus interviews and focus groups with teachers, instructors and children	Qualitative ROE program: 6 teacher interviews; 3 Instructors focus groups; 3 student focus groups (21 students)	All groups (teachers, students and instructors) noted an increase in knowledge about infant development	Latsch, D., Stauffer, M., & Bollinger, M. (2017). Evaluation of the Roots of Empathy program in Switzerland, years 2015 to 2017. Full Report. Bern: Bern University of Applied Science.

Cost Effectiveness	Northern Ireland	2011 - 2012	Cluster randomized control plus cost effectiveness analysis in QALY's and £	Quantitative: ROE Program: 695 Control: 583	ROE is cost-effective in line with national guidelines	Connolly P, Miller S, Kee F, Sloan S, Gildea A, McIntosh E, Boyer N, Bland M. (2018) A cluster randomized controlled trial and evaluation and cost-effectiveness analysis of the Roots of Empathy schools-based program for improving social and emotional well-being outcomes among 8- to 9-year-olds in Northern Ireland. <i>Public Health Research</i> 6(4).
	Manitoba, Canada	2002 - 2005	Cluster, randomized control	ROE program: 445 Control: 315	ROE is cost-effective in relation to the treatment of mental health problems	Santos, R.G., Chartier, M.J., Whalen, J.C., Chateau, D., & Boyd, L. (2011). Effectiveness of school-based violence prevention for children and youth: Cluster randomized controlled field trial of the Roots of Empathy program with replication and three-year follow-up. <i>Healthcare Quarterly</i> , 14, 80-90.

Meta-Analysis of Existing Evaluations of Roots of Empathy¹

This study, conducted by Connolly et al, combined the results of the above studies and subjected the combined data to a meta- analysis. This meta-analysis showed the following:

- ROE is significantly associated with an improvement in prosocial behaviour (7 studies)
- ROE is associated with a decrease in aggressive behaviour (7 studies)
- At this stage (possibly because of a lack of an effective measurement tool) there is insufficient evidence to indicate that ROE improves child-reported empathy or emotional regulation.

1. Connolly P, Miller S, Kee F, Sloan S, Gildea A, McIntosh E, Boyer N, Bland M. (2018) A cluster randomised controlled trial and evaluation and cost-effectiveness analysis of the Roots of Empathy schools-based program for improving social and emotional well-being outcomes among 8- to 9-year-olds in Northern Ireland. *Public Health Research* 6(4).