Randomized Controlled Trial of an Online Problem-Solving Intervention Following Adolescent Traumatic Brain Injury: Family Outcomes

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Abstract

Objective: To examine parent and family outcomes of a randomized controlled trial (RCT) comparing Teen Online Problem-Solving with Family (TOPS-F), Teen Online Problem-Solving-Teen Only (TOPS-TO), or access to Internet resources alone (Internet resource comparison [IRC]).

Design: Three-arm RCT.

Setting: Four children's hospitals and 1 general medical center in Ohio and Colorado.

Participants: Children and adolescents (N = 152), 11–18 years old, hospitalized for complicated mild to severe traumatic brain injury in the previous 18 months.

Interventions: Intervention groups: TOPS-F, TOPS-TO, and IRC.

Main Outcome Measure: Parental depression (CES-D), parental psychological distress (SCL-90-GSI), family functioning (FAD-GF), cohesiveness (PARQ), and conflict (IBQ) were assessed pre- and post-treatment. Treatment effects and the moderating effect of the number of parents in the home (single vs 2-parent families).

Results: Number of parents moderated treatment effects with effects ranging from trending to statistically significant for depression, family functioning, cohesion, and conflict. Among single

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parents, TOPS-TO reported better family functioning than TOPS-F and greater cohesion and less conflict than IRC. Among 2-parent families, TOPS-F reported less depression than IRC and less depression and greater cohesion than TOPS-TO. The effect of family composition was also noted within TOPS-TO and TOPS-F. In TOPS-F, 2-parent families reported less depression than single-parent families. In TOPS-TO single parents reported greater cohesion and better family functioning than 2-parent families.

Conclusions: Findings support the TOPS intervention improves family outcomes, with differential effects noted for single vs 2-parent households. The TOPS-TO format appeared more beneficial for single-parent households, while TOPS-F was more beneficial for 2-parent households, highlighting the importance of considering family composition when determining the best treatment modality.

Keywords

Adolescent; Brain injuries; traumatic; Family; Problem solving; Rehabilitation; Single-parent family

Traumatic brain injury (TBI) is the leading cause of death and disability in childhood, with adolescence representing a period of heightened risk.[1] Children and adolescents who sustain a TBI are at risk of a range of short- and long-term psychosocial challenges. These include internalizing problems, externalizing behavior problems, and experiencing changes in personality.[2–4] Internalizing and externalizing behavior problems that emerge after a TBI may abate over time, though for some youth, they may persist or intensify.[2,5–7]

Effects of pediatric TBI often extend beyond the injured child or adolescent and affect family functioning. Parents of children or adolescents with TBI report poorer psychological functioning including greater stress and anxiety[8,9] and feelings of guilt and grief.[10] Factors that contribute to poorer parent psychological functioning following pediatric TBI include chronic family stress and fewer resources, poor coping strategies, and increased child or adolescent mood and behavioral problems.[11–14]

In pediatric TBI samples, parent and family functioning affects adolescent psychological functioning and behavioral recovery following injury.[15] For example, poorer parental psychological functioning within the first 6 months post TBI predicted increased adolescent behavior problems, while greater parental communication of warmth was associated with fewer behavior problems.[16] Despite elevated risk of TBI in adolescence, significant burden of injury on family functioning, and the influence of parent and family functioning on optimal recovery, few interventions target the unique and evolving needs of adolescents and their families post TBI.[17] Given the importance of parental mental health and family functioning to recovery, parenting or family-centered interventions may be an effective strategy to improve family functioning, parental mental health, and child outcomes after TBI. Further, families managing sequelae of TBI may struggle to access traditional in-office psychological interventions. Lack of transportation or living far from centers of care may also affect access to services.[18]

To improve access to care and promote functioning of adolescents and families affected by pediatric TBI, Wade et al developed a web-based family problem-solving intervention targeting challenges and needs of this population. Although problem solving therapy was originally developed as a cognitive behavioral treatment to promote more effective coping with life stresses and reduce distress and/or depressive symptoms,[19–22] it may be particularly beneficial for children with TBI and their families because it provides the injured individual with an executive function heuristic for addressing postinjury challenges. The intervention teaches the adolescent and their family cognitive reframing, problem solving, communication skills, and behavior management. It helps families define goals and involves real-life exercises and continual practice of learned skills to systematically resolve challenges that are causing distress. Problem-solving interventions may be particularly suited to the needs of families affected by adolescent TBI because it teaches skills that are generalizable beyond the intervention setting and can address challenges that may emerge over time. Findings from a randomized controlled trial (RCT) of the family-based Teen Online Problem-Solving (TOPS) intervention indicated positive effects of this intervention.[23,24] However, findings to date suggest that some adolescents and families may be more poised to benefit. For example, greater improvements in parental depression were seen in families from lower income households,[23] and greater gains in adolescent executive functioning were found in older adolescents.[25–27]

Additionally, evidence suggests that among certain subsets of families, participating in a family-based intervention soon after injury may add to burden, and parents may not be responsive to treatment. For example, Raj et al[28] found that parents from single-parent homes were more likely to drop out of a family-based problem-solving intervention delivered within 6 months of adolescent TBI. This is consistent with findings among other clinical populations that suggest single parents experience greater barriers to participation and are more likely to drop out of treatment.[29–31] However, single parents who participate generally report improved functioning,[32] maintaining improvements over time.[33]

In the present study, the TOPS intervention was reconfigured to be delivered as a teen-only intervention (TOPS-TO) or a family-based format (TOPS-F). We were particularly interested in examining whether the number of parents (ie, single- vs dual-parent homes) would moderate intervention effects. In general, we expected that parents receiving the family-based intervention (TOPS-F) would report greater psychological gains than those in the teen-only intervention (TOPS-TO) or the active control condition (ie, Internet resource comparison [IRC]). Further, based on findings from our pilot study and previous literature highlighting limited effectiveness among single-parent families, we hypothesized that parents from 2-parent homes would experience the greatest treatment gains in both the TOPS-TO and TOPS-F conditions. The family outcomes assessed in this paper are secondary outcomes of this RCT. The trial was powered to detect child behavioral outcomes, and these primary outcomes are published elsewhere.[34]

Methods

The study used a 3-armed (TOPS-F, TOPS-TO, IRC), multisite RCT. Participants were recruited from 4 children's hospitals and 1 general medical center in Ohio and Colorado.

Recruitment occurred between March 2010 and August 2014, and follow-up assessments were completed between December 2010 and July 2015. The study was approved by institutional review boards of all participating institutions and was registered with clinicaltrials.gov.[35]

Participants

Inpatient admissions and trauma registries at participating institutions were screened for participants aged 11–18 years. Inclusion criteria included (1) hospitalization of at least 1 night because of TBI in the previous 18 months, (2) history of moderate to severe TBI as characterized by a lowest Glasgow Coma Scale score of <13 or evidence of brain injury visible on clinical imaging, (3) completion of inpatient rehabilitation, (4) residence with parent or primary parent, and (5) English as the main language in the home. Exclusion criteria included (1) nonblunt head trauma, (2) history of child abuse, (3) adolescent psychiatric hospitalization prior to their TBI, or (4) parental hospitalization for a psychiatric disorder in the previous 5 years. In addition, adolescents who had not recovered sufficiently to verbally participate were excluded. A total of 152 adolescents (11–18 years; mean ± SD, 14.87±2.04 years; 70% male) and their primary parents completed the baseline assessment. Enrollment, group assignment, and attrition are detailed in the Consolidated Standards of Reporting Trials diagram (fig 1).

Procedures

Baseline visits were conducted in the families' homes within 18 months of injury (mean ± SD, 5.7±4.0 months post injury) to complete baseline measures with adolescents and their primary parent. Families were randomly assigned to 1 of the 3 conditions: TOPS-F (n=49), TOPS-TO (n=51), or IRC (n=52). Group assignment was stratified by adolescent sex and race/ethnicity and were generated prior to study initiation using a computer program developed by biostatisticians at the primary site. While we were unable to conceal group assignment from the families or research staff, parent and teen report served as the primary outcome measure, minimizing potential researcher bias. Postintervention data were collected approximately 6 months after baseline. Families in all 3 groups were provided with Internet service for the duration of the study, and families without a computer were provided one, ensuring that families had equal access to web-based resources.

Intervention conditions

TOPS-Family (TOPS-F)—TOPS-F was a web-based, family-centered problem-solving intervention designed to support adolescent and family outcomes following pediatric TBI. The intervention addressed common challenges following TBI by providing psychoeducation as well as teaching adolescents and their parents a 5-step problem solving process (Aim, Brainstorm, Choose, Do, and Evaluate) that was generalizable to concerns beyond those addressed during the study. This problem-solving framework was grounded in Nezu and D'Zurilla's[19] problem-solving therapy model. The intervention consisted of 10 core sessions addressing topics such as staying positive, organization, managing anger, coping with stress, and improving self-care. In addition to core content, families selected up to 4 of 8 supplemental sessions (eg, marital communication, managing guilt and/or grief,

and pain management). The intervention website included information and links to resources for TBI (eg, Brain Injury Association, Brain Injury Partners, and the Center on Brain Injury Research and Training).

The first session took place in the family's home so that the clinician could orient the family to the program and manage technological aspects of the intervention (eg, accessing the website and setting up a Skype account). All subsequent sessions were conducted via Skype and consisted of 2 parts. First, families accessed the website and reviewed the self-guided web content (eg, psychoeducation, videos, interactive activities). Families then met with their clinician via Skype to discuss session content and practice problem-solving. Families completed 1 session each week or every other week.

Therapists were advanced clinical psychology graduate students or licensed clinical psychologists. All therapists were trained to deliver the intervention and participated in weekly or biweekly supervision with the developer of the intervention (a licensed clinical psychologist). Supervision served to enhance fidelity and adherence. In addition, all therapists referred to a detailed manual with step-by-step guidance to facilitate each session and completed a session checklist at the end of each session (fidelity on these checklists were 90% and higher). The intervention was designed to be completed within 6 months. Further details about the intervention, including a table of sessions, are presented by Wade et al.[35]

TOPS-Teen Only (TOPS-TO)—Content for TOPS-TO was adapted from the TOPS-F intervention based on focus groups with adolescents with TBI and their parents. These adaptations and refinements included shortening sessions (or dividing content into 2 sessions), editing content to make it more applicable for teen-only delivery, and increasing interactive activities. Although primarily an adolescent-based intervention, parents were asked to participate in Session 1 (introduction session held in the family home), Session 2 (staying positive), and Session 10 (planning for the future). The general structure and delivery of TOPS-TO was similar to TOPS-F described above. See research by Wade et al[35] for further details about the intervention.

Internet Resource Comparison (IRC)—Families in the IRC condition were provided access to a web page with external links to the same online resources that were provided to families in TOPS-F and TOPS-TO. Adolescents and families were encouraged to spend 1 hour each week using the Internet to access information regarding pediatric TBI. The IRC families did not have access to the intervention content or therapist-guided sessions.

Measures

All measures were collected at both baseline and follow-up visits.

Background and demographics

Primary caregivers were interviewed to obtain demographic information on factors such as family income, relationship status, and level of education. This information was collected at baseline and follow-up visits; however, demographic information collected at the baseline

visit was used to characterize the sample and in analyses. Data were collected from secondary caregivers when possible; however, because of the limited number of secondary caregivers who responded (n=42), their varied relationship to the participant, and their inconsistent participation in the intervention, only the primary caregiver reports were used. The number of parents in the home was determined by parental report of individuals living in the household. A family was characterized as being a 2-parent household if both biological parents lived in the home or a parent's significant other resided in the home (regardless of whether they were legally married). While the sample does not include any same-sex couples, they were not excluded from the study.

Parental functioning

Global psychological distress—The Symptom Checklist-90R: Global Severity Index (SCL-90R:GSI)[36] was used to measure global psychological distress among parents. The GSI scores are reported as *t* values, with higher scores indicating greater levels of distress.

Depression—The Center for Epidemiological Studies Depression Scale (CES-D[37]) was used to measure parent depression. Scores on the CES-D range from 0–60, with higher scores reflective of greater depressive symptomatology.[37]

Family functioning

Global family functioning—The 12-item General Functioning scale from the McMaster Family Assessment Device (FAD-GF)[38] was used to assess family functioning. Scores on the FAD-GF range from 1–4, with higher scores indicating poorer family functioning.

Family cohesion—The Cohesion scale of the Parent Adolescent Relationship Questionnaire (PAR-Q)[39] was used to assess family cohesion. The Cohesion scale consists of 15 true/false items. Scores range from 0–15, with higher scores suggesting greater family cohesion.

Parent-adolescent conflict—The Interaction Behavior Questionnaire-Short Form (IBQ)[40] was used to measure parent-adolescent conflict. The IBQ is comprised of 20 true/false questions. Scores range from 0–20, with higher scores indicating greater parent-adolescent conflict.

Analyses

Separate general linear models were used to assess the relative effectiveness of treatment groups (TOPS-F, TOPS-TO, IRC) by examining post-treatment outcomes while controlling for baseline scores of the outcome variable being examined in the model. To examine the moderating effect of the number of parents, the interaction of treatment group and number of parents (single- vs 2-parent household) were included in the models. We controlled for relevant demographic variables including injury severity, participant age, and socioeconomic status (as measured by maternal education). Separate models were run for each of the outcomes of interest, which included parental distress (SCL-90:GSI), parental depression (CES-D), family functioning (FAD-GF), parent-reported cohesion (PARQ), and parent-reported conflict (IBQ). For example, the models examining the effectiveness of

treatment group and moderating effect of number of parents on parental distress included (1) post-treatment SCL-90 scores as the dependent variable; (2) treatment group, number of parents in the home, and their interaction as main effects and moderation effect (interaction); and (3) baseline SCL-90 scores, injury severity, participant age, and socioeconomic status as control variables. All statistical analyses were conducted using SAS version 9.1.3.[a]

Results

Group differences at baseline

Families in the 3 treatment conditions were well matched at baseline, with no significant differences in demographic (eg, age at injury and baseline, household income, parental education) or outcome variables (table 1). Rates of attrition were equivalent across groups. With the exception of child race ($\chi^2(1)=6.12$; $P=.01$), no demographic or parent and/or family functioning differences were observed between those who completed the follow-up assessment and those who dropped out. White participants were more likely to complete follow-up (79%) than were nonwhite participants (57%).

Parental functioning

Global psychological distress (SCL-90R:GSI)—There was no effect of treatment group, number of parents, or their interaction on parent-reported distress at the 6-month follow-up.

Parental depression (CES-D)—The number of parents moderated the effect of treatment group at the 6-month follow-up (F[2,96]=4.44; $P=.01$). As depicted in figure 2, parents from 2-parent households in TOPS-F reported fewer depressive symptoms at follow-up than those in TOPS-TO ($P=.03$; $d=.44$) and IRC ($P=.01$; $d=.56$) and single parents in TOPS-F ($P=.03$; $d=.45$). There were no treatment group differences in depression among single parents.

Family functioning

Global family functioning (FAD-GF)—The moderating effect of the number of parents was not significant (F[2,97]=2.59; $P=.08$). As depicted in figure 3, at follow-up single parents in the TOPS-TO intervention group reported marginally less family dysfunction than parents from 2-parent households in TOPS-TO ($P=.07$; $d=.37$) and significantly less than single parents in TOPS-F ($P=.045$; $d=.41$). There were no treatment group differences noted in 2-parent households.

Family cohesion (PAR-Q)—The moderating effect of the number of parents in the home on family cohesion was not significant (F[2,98]=2.85; $P=.06$; fig 4). At follow-up, single parents in TOPS-TO reported marginally greater family cohesion than parents from 2-parent households also in TOPS-TO ($P=.05$; $d=.39$). Additionally, among single parents, those in TOPS-TO reported greater family cohesion than those in IRC ($P=.02$; $d=.47$), while single parents in TOPS-F reported similar levels of cohesion as single parents in the IRC group. In contrast, among parents from 2-parent households, those in the TOPS-F intervention reported greater cohesion that those in TOPS-TO ($P=.04$; $d=.43$).

Parent-adolescent conflict (IBQ)—Number of parents moderated the effect of treatment group on parent-adolescent conflict (F(2,99)=3.33; P=.04; fig 5). At follow-up, single parents in IRC reported greater conflict than parents from 2-parent households in IRC (P=.01; d=.53). Finally, single parents in TOPS-TO reported marginally less conflict than single parents in IRC (P=.05; d=.40); however, no treatment group differences were noted in 2-parent households.

Discussion

We examined the effects of the number of parents (ie, single- vs dual-parent homes) on parent and family outcomes within a 3-armed RCT of an online problem-solving intervention for adolescents with a history of TBI. Consistent with expectations, the efficacy of the family and teen-only treatments was moderated by the number of parents living in the home, with little evidence of main effects of problem-solving therapy over access to Internet resources on parent distress, depression, or family functioning. Parents from 2-parent households who received the family-based intervention (TOPS-F) experienced the greatest improvement, reporting less depression then those from 2-parent households in the teen-only intervention and control condition as well as single parents in the family-based intervention. Additionally, 2-parent families in the family-based intervention reported greater family cohesion post intervention than those who received the teen-only intervention. In contrast, the teen-only format (TOPS-TO) was more efficacious in single-parent households. Following the intervention, single parents in TOPS-TO reported marginally greater family cohesion than those in the IRC condition and significantly greater cohesion than 2-parent families in the teen-only intervention. Further, single parents in the teen-only intervention reported less family dysfunction than single parents in the family-based intervention and 2-parent households in the teen-only intervention. Finally, single parents in the teen-only group reported marginally less conflict than those in the control group. These findings support the notion that adolescents from single-parent households in the teen-only condition learned and implemented new skills without adding to parent burden. This highlights the importance of considering the number of parents in the home and resources when determining treatment modality for adolescents with TBI.

A number of factors may explain the effect of the number of parents in the home on treatment outcomes. Single parents are more likely be burdened with daily stressors and stressful life events while receiving lower levels of social, emotional, and parental support,[41,42] and TBI may exacerbate these burdens. While single parents completed a similar number of sessions as parents in 2-parent households across treatment groups, single parents shouldering multiple responsibilities may have struggled to engage in the intervention and practice newly learned skills. Single parents reported comparable levels of psychological distress to those of parents from 2-parent households at the baseline assessment; however, there was a trend for single parents to report greater levels of interpersonal stress than 2-parent families at this visit (P=.06). As a consequence, the intervention may have constituted an additional burden on them. In a manuscript examining adolescent outcomes of this RCT,[34] we found that at lower levels of parent stress, adolescents in the TOPS-F group reported significantly less executive dysfunction than those in the TOPS-TO group at follow-up. However, at high levels of parental stress,

the pattern was reversed with participants in the TOPS-TO group reporting less executive dysfunction than those in the TOPS-F group at follow-up. Together, these findings suggest that levels of parental stress may indicate the format of intervention best suited to a given family. The teen-only format was more efficacious in improving family conflict in single-parent households, indicating that aspects of the intervention were helpful in single-parent homes. Parental scaffolding of the adolescent's problem-solving may serve as an important support in 2-parent families, whereas it may create additional conflict in already stressed, single-parent households. In the latter situation, the adolescent's independent mastery of self-regulation and problem-solving skills may serve to reduce conflict and boost cohesion.

More than 25% of children and/or adolescents <18 years live in single-parent homes,[43] yet there is limited research addressing the effects of household composition on treatment acceptability and outcomes in pediatric populations. Findings from this study underscore the need to further examine the effect of the number of parents in the home on response to intervention post TBI and to provide families with the support that is most likely to benefit them. For example, in single-parent homes with high levels of reported stressors, addressing sources of stress and developing parental coping strategies may be beneficial prior to engaging in a problem-solving intervention. This may be especially true in cases where the adolescent needs a high level of support and scaffolding from a parent to access and apply strategies from treatment.

Study limitations

Findings from this study should be considered in the context of some limitations. First, families were recruited for the study regardless of parent and family functioning, with a majority of parents and families reporting functioning within normal limits. Intervention effects may have been larger if the study had specifically recruited parents and families experiencing a higher level of problems post TBI. Similarly, as with all clinical trials, these findings relate to children and families who agree to participate in an intervention trial, who may differ from families who declined participation. As such, generalizability of the findings may be somewhat limited. In addition, the intervention was designed to address and support adolescent behavioral and executive functioning, rather than directly improve parent and family functioning. While the effects of the TOPS-F and TOPS-TO on parent and family outcomes are promising, additional content directly addressing parents or separate treatment for distressed parents may be useful complements to the intervention. Along these lines, we did not assess parental problem-solving skills and thus are unable to examine whether improvements in problem-solving skills mediated reductions in parental distress, as was demonstrated in the original trial of TOPS.[23] Further, we did not measure whether or how frequently families in the IRC group accessed the Internet resources provided to them; therefore, we are unable to determine whether families were in fact accessing new online resources through the program. In addition, only data collected from the primary caregiver, who were nearly all mothers, were used in the current study; therefore, fathers' perspectives did not inform the current findings. Next, although there were no statistically significant differences between treatment groups at baseline, the TOPS-TO group did appear to have better functioning than the other groups, which may have limited our ability to detect improvements in this group. Finally, the sample was relatively heterogeneous, which may

have limited the ability to detect more subtle treatment differences, and white participants were more likely to complete the follow-up assessment than nonwhite participants, further limiting potential generalizability of findings.

Conclusions

Despite these limitations, findings from this study are encouraging and suggest that different configurations of treatment delivery resulted in improvements in parental and family functioning. Adapting the family-based format to reduce family involvement and burden did not have a negative effect on parental and family outcomes and highlights the importance of considering the family environment and the number of parents in the home when examining treatment outcomes in this pediatric population.

Acknowledgments

List of abbreviations:

CES-D	Center for Epidemiological Studies-Depression Scale
FAD-GF	Family Assessment Device-General Functioning
IBQ	interaction behavior questionnaire
IRC	Internet resource comparison
PARQ	Parent Adolescent Relationship Questionnaire
RCT	randomized controlled trial
SCL-90-GSI	Symptom Checklist-90R-Global Severity Index
TBI	traumatic brain injury
TOPS-F	Teen Online Problem Solving-Family
TOPS-TO	Teen Online Problem Solving-Teen Only

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43. United States Census Bureau. The majority of children live with two parents, census bureau reports [press release]. Washington (DC): United States Census Bureau; 2016.
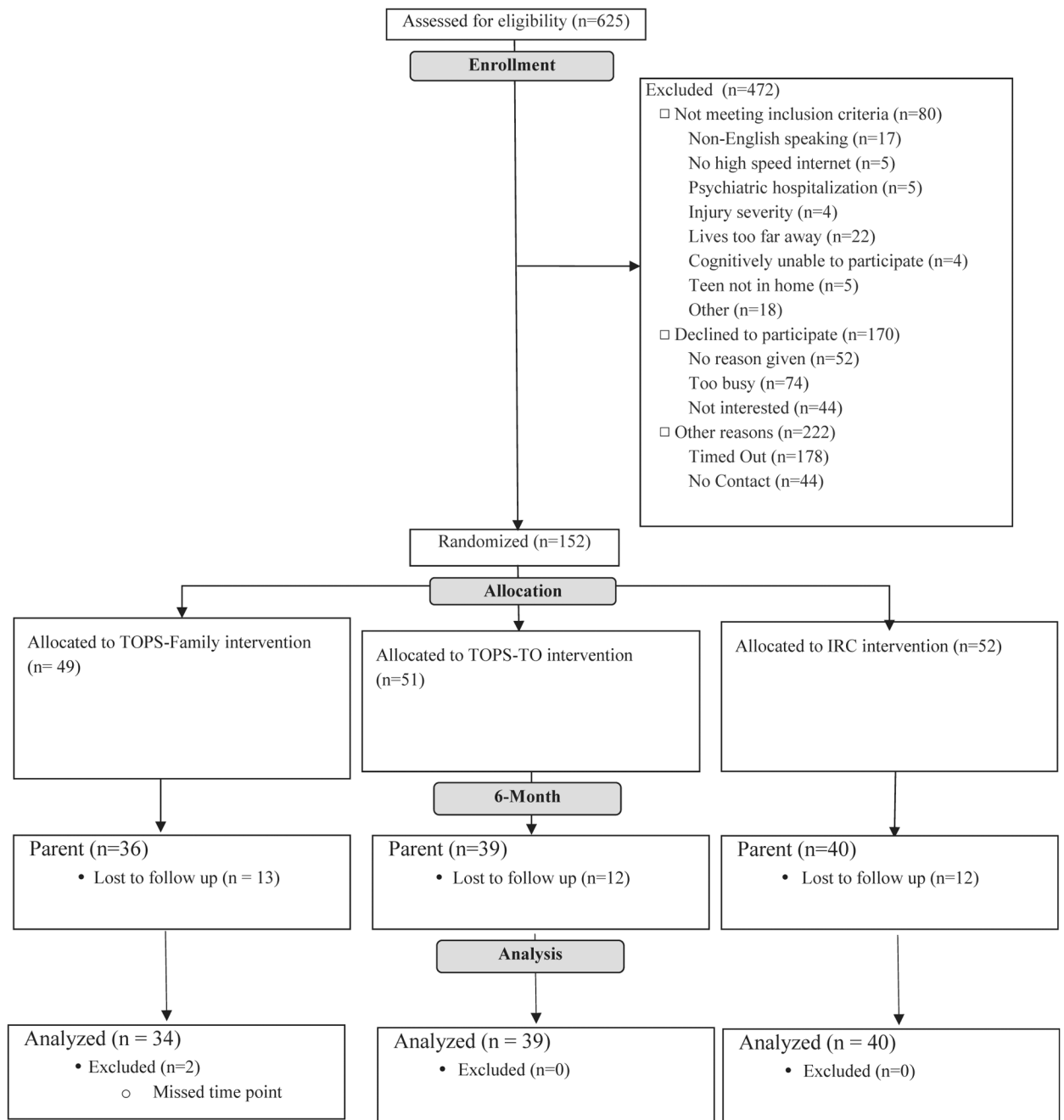
Assessed for eligibility (n=625)

Enrollment

Excluded (n=472)
☐ Not meeting inclusion criteria (n=80)
   Non-English speaking (n=17)
   No high speed internet (n=5)
   Psychiatric hospitalization (n=5)
   Injury severity (n=4)
   Lives too far away (n=22)
   Cognitively unable to participate (n=4)
   Teen not in home (n=5)
   Other (n=18)
☐ Declined to participate (n=170)
   No reason given (n=52)
   Too busy (n=74)
   Not interested (n=44)
☐ Other reasons (n=222)
   Timed Out (n=178)
   No Contact (n=44)

Randomized (n=152)

Allocation

Allocated to TOPS-Family intervention (n= 49)

Allocated to TOPS-TO intervention (n=51)

Allocated to IRC intervention (n=52)

6-Month

Parent (n=36)
• Lost to follow up (n = 13)

Parent (n=39)
• Lost to follow up (n=12)

Parent (n=40)
• Lost to follow up (n=12)

Analysis

Analyzed (n = 34)
• Excluded (n=2)
   o Missed time point

Analyzed (n = 39)
• Excluded (n=0)

Analyzed (n = 40)
• Excluded (n=0)

Fig 1.
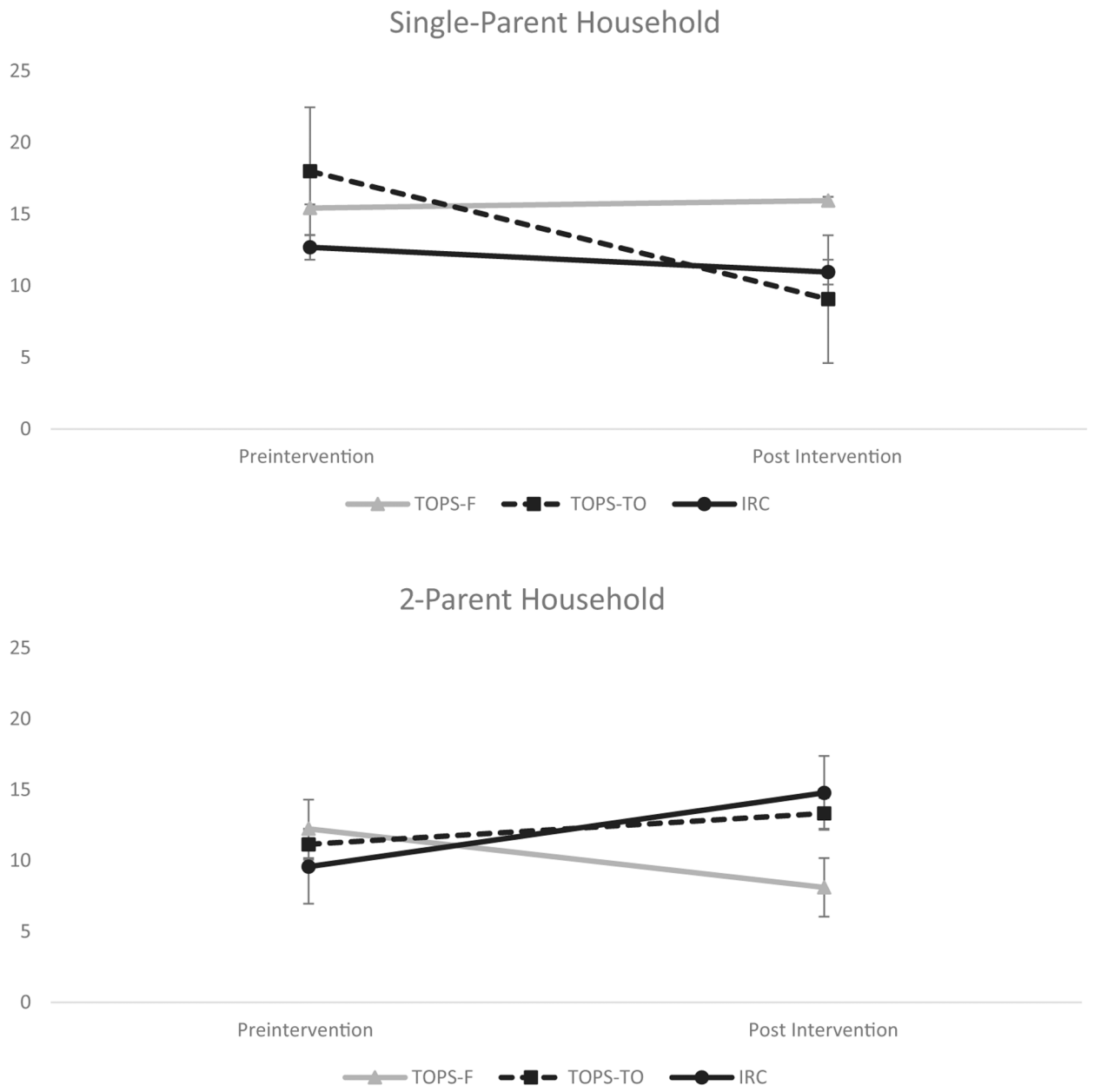Consolidated Standards of Reporting Trials (CONSORT) flow diagram.

Fig 2.
Parent-reported depression on Center for Epidemiologic Studies Depression Scale (CESD) at follow-up by treatment group among single-parent household vs 2-parent household.
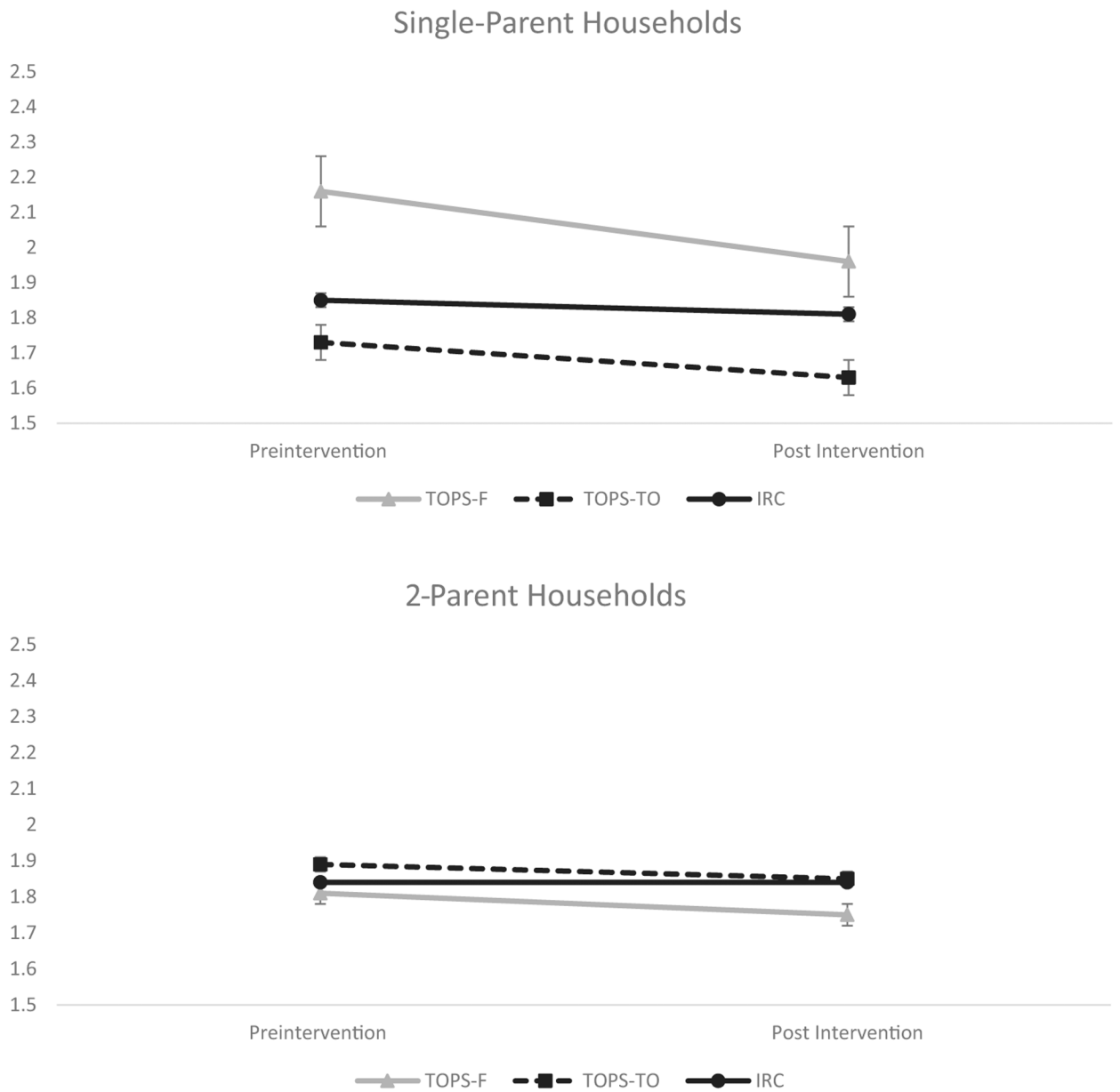
Single-Parent Households

2-Parent Households

Fig 3.
Parent-reported family functioning on FAD-GF at follow-up by treatment group among single-parent households vs 2-parent households.
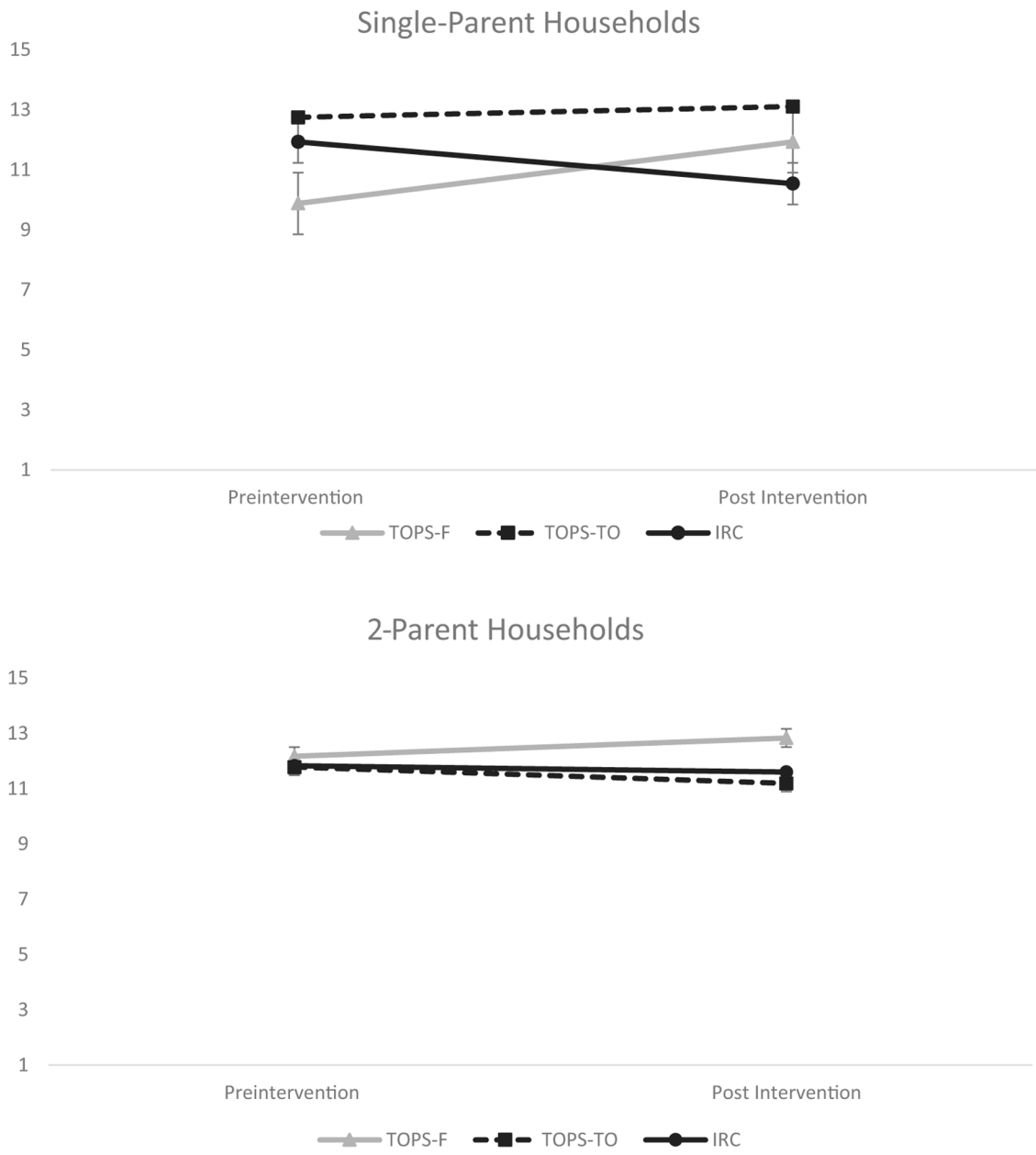
Fig 4.
Parent-reported family cohesion on PAR-Q at follow-up by treatment group among single-parent households vs 2-parent households.
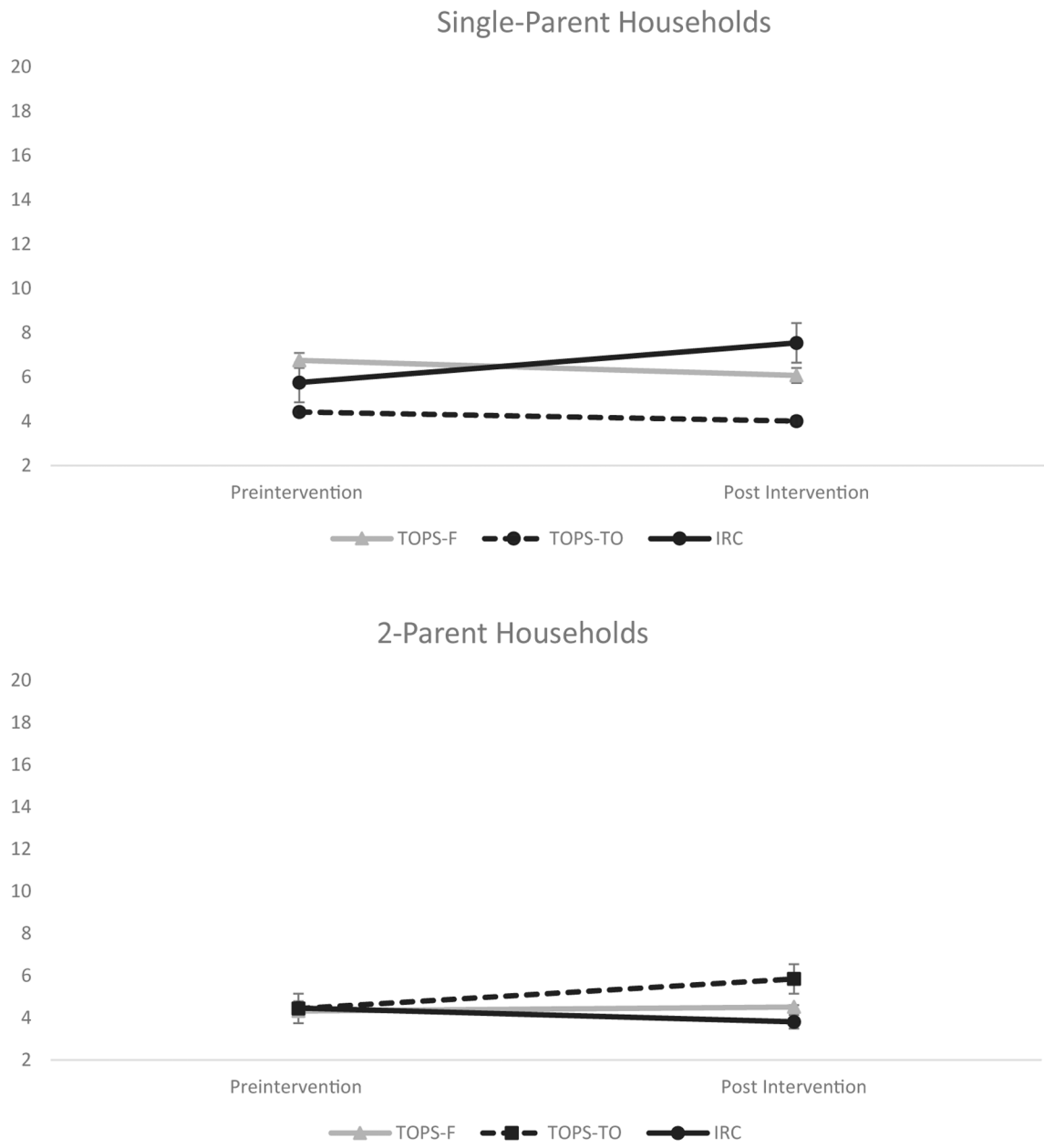
Single-Parent Households

2-Parent Households

Fig 5.
Parent-reported conflict on IBQ at follow-up by treatment group among single-parent households vs 2-parent households.

Table 1

Demographic information and baseline scores for each intervention group

Characteristic	TOPS-Family (n=49)	TOPS-Teen Only (n = 51)	IRC (n = 52)
Child age at baseline (y)	14.72±2.08	14.77±1.95	15.11±2.11
Time since injury at baseline (y)	0.44±0.33	0.49±0.36	0.51±0.32
Child sex (% male)	71.4	68.6	71.2
Child race (% white)	79.6	82.4	78.8
No. of parents in the home (% of families with 2 caregivers in the home)	67.3	72.5	69.2
Primary caregiver education (%)			
No college	36.7	33.4	51.9
At least 2 years of college	34.7	35.3	28.8
Bachelor's or graduate degree	28.6	31.3	19.3
Census tract annual income ($)	67,801±28,690	71,148±29,363	64,078±26,413
Caregiver/family functioning			
CES-D	13.94±9.79	13.02±9.56	10.57±8.18
SCL-90-R: GSI	53.27±12.22	53.94±12.05	51.82±10.40
FAD	1.91±.44	1.87±.42	1.86±.46
IBQ: Caregiver report	4.75±5.40	4.67±5.29	4.71±5.42
PARQ: Caregiver report	11.43±3.54	12.04±3.23	11.65±3.52

Abbreviation: CESD, Center for Epidemiological Studies Depression Scale.