Feeling Better: Experiences and Needs of Adolescents and Professionals Regarding Their Mentoring Relationship in Residential Youth Care

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Abstract

Background In residential youth care, group care workers and teachers often serve as a mentor for individual adolescents. Although favorable mentoring relationships are associated with positive adolescent outcomes, few studies examined the role of mentoring in residential youth care.

Objective The present study aims to assess adolescents’, care workers’ and teachers’ mentoring relationship needs in terms of their one-on-one conversations during residential care.

Methods We conducted structured interviews with eleven adolescents, ten group care workers and two teachers and content analysis to assess the data.

Results All respondents are rather satisfied with their conversations, which are often concerned with how the adolescent is doing. Adolescents mostly consider their family and home-situation as difficult topics, while care workers mostly consider sexuality as a difficult topic to talk about. Although ‘improvement’ with the youth is often the aim, most adolescents report that they do not (know if they) show changes because of these conversations. Moreover, only one of the twelve professionals thinks that it is his core task to achieve behavior change with the adolescents. According to the professionals, conversations often aim at building a good relationship, coaching, determining treatment goals, and gaining insight into the adolescent. Adolescents prefer a mentor who is calm, has respect, listens, and is reluctant in giving advice. Most professionals do not use a specific method and doubt whether they want to have conversations according to a manual or support tool.

Conclusions Despite being rather satisfied, adolescents and professionals indicate several points for improvement of one-on-one conversations.

Keywords Residential youth care · Adolescents · Mentoring relationships · One-on-one conversations · Group care workers · Teachers
Introduction

Young people in residential care show the most serious problems in comparison to those in foster care and family-style group care (Leloux-Opmeer et al., 2016). Risk behaviors such as suicide risk, self-mutilation, being a danger to others, and delinquency are quite common for youth in residential care (Lyons et al., 2015). Moreover, residually placed youth experience a high number of previous placements, which reflects the tendency to use residential care as a ‘last resort’ (Leloux-Opmeer et al., 2016; Thoburn, 2016). Considering the ‘very complicated, high-need and high-risk youth’ (Lyons et al., 2015, p. 64) it can be difficult for residential care workers to establish a good, genuine therapeutic or mentoring relationship with individual young people during care (Harder et al., 2013). Several studies indeed suggest that a good alliance or relationship is often difficult to establish with young people showing serious behavioral problems (Florsheim et al., 2000; Van Binsbergen, 2003).

Research in residential youth care indeed shows that positive relationships between youth and care workers are associated with higher treatment satisfaction of youth (Harder et al., 2012), lower premature departure rates (Grooters et al., 2013), higher chances for success (Marsh & Evans, 2009), and lower recidivism rates after departure from residential care (Florsheim et al., 2000). However, we also know that outcomes for residential care are limited, specifically over the long-term (cf. Knorth et al., 2008; Huefner et al., 2018).

To develop, monitor, and maintain meaningful relationships with young people from the beginning of placement, individual care workers often serve as a mentor for young people. A mentor is ‘a supportive adult who is significant to the child, who provides guidance, emotional and practical support, and who can serve as a role model and advocate in addition to or regardless of parents’ (Sulimani-Aidan, 2017, p. 862). Mentorship can occur naturally when youth develop relationships from their own lives by (family) contacts, in which for example aunts, grandparents or neighbors can be a ‘natural’ mentor (Ahrens et al., 2008; Cavell et al., 2002). Young people can also have a ‘formal’ mentor, such as a staff member in the context of a treatment program (Sulimani-Aidan, 2017). Research shows that having an individual mentor is associated with better outcomes of care for youth (Massinga & Pecora, 2004). Mentoring relationships are associated with positive outcomes of young people, regardless of whether mentorships occur naturally or in the context of treatment (Ahrens et al., 2008). Recent studies of youth in out-of-home placements indicate that a successful mentoring relationship in care is associated with better emotional, educational, and behavioral outcomes in adulthood (Sulimani-Aidan, 2017).

In the context of residential youth care, mentors can fulfill an important role. For example, the study of Sulimani-Aidan (2017) shows that most of the young adults who left residential care in Israel consider the residential staff members as their mentor: the most important, non-parental adult. Staff members who formed meaningful relationships with the youth were available to the youth, familiar with their personal backgrounds, able to see them as positive and trustworthy, and were providing guidance and support from a non-judgmental approach. The young people considered these mentors as protective factor against negative outcomes. Having one-on-one conversations with their mentor prevented the young people from risk behaviors.

Research in family foster care also shows positive care outcomes in association with having a mentor. Youth with a (formal or informal) mentor show more positive care outcomes, among others in terms of reporting less suicidal ideation and less aggressive behavior than youth without such a mentor (Ahrens et al., 2008). In another foster care study,
Munson and McMillen (2009) show that youth with an informal mentor are more satisfied with their life and experience less stress and depression symptoms six months after assignment of the mentor than youth without such a mentor. In the long run, having a mentor also associates with experiencing less stress and a lower chance of getting into contact with the police (Munson & McMillen, 2009).

A review study of mentoring programs for youth at-risk shows that support by an older, experienced adult, who functions as a role model and offers emotional support and advice, associates with less behavioral problems of youth. For high-risk youth these programs have a modest positive effect for delinquency, aggression, drug abuse, and school performance (Lipsey, 2009; Tolan et al., 2008). More recently, Tolan et al. (2014) found moderate, positive outcomes of mentoring programs in terms of reducing recidivism, prevention of delinquency, and improving school performance.

However, these mentoring programs focus on preventive support of at-risk youth and not on youth in residential youth care. Moreover, it is unclear what components of mentoring programs are associated with positive outcomes. Furthermore, a meta-analysis of 55 youth mentoring program studies showed that there is a modest or small benefit of program participation for the average youth (DuBois et al., 2002). Youth mentoring programs associate with better outcomes if there are strong relationships between mentor and youth, and if theory and empirically based ‘best practices’ are utilized. In addition, DuBois et al. (2002) mention that poorly implemented programs have an adverse effect on youth at-risk due to personal vulnerabilities.

In residential youth care, group care workers (Knorth et al., 2010) and teachers (Harder et al., 2014) represent the most important influential discipline because they interact with the young people on a daily basis. One of the group care workers and/or teachers is often a mentor who is involved in the individual treatment planning of young people during their stay. This mentor has individual one-on-one conversations with young people during residential treatment, which have a support function. These one-on-one conversations are one of the core activities in the mentoring relationship between adolescents, group care workers and teachers.

Despite these one-on-one conversations between professionals and youth, young people regularly experience a lack of individual attention during their stay in residential care (cf. Harder et al., 2006; Connor et al., 2004). Moreover, young people in residential mention that care workers often give them practical support instead of encouraging personal communication on a day-to-day basis (Palareti & Berti, 2010). Research shows, however, that individual support during residential care is very important for the well-being of young people (Boendermaker et al., 2013; Jager, 2016). For example, young people consider ‘real’ conversations with professionals important, as well as involvement, empathy, listening, showing respect, and understanding by the care professional (Harder et al., 2013, 2017; Boendermaker et al., 2013; Geenen, 2017).

Although individual contacts between young people and their mentor during residential care seems to be important, there is a gap of knowledge about how this mentoring relationship is established. The studies that have been conducted show that adolescents tend to use group care workers and teachers as a secure attachment figure, but that they also experience a limited affective bond in their relationship. Furthermore, a good quality relationship is predicted by positive treatment skills, such as being reliable and clear, of both group care workers and teachers (Harder et al., 2013).

Mentoring relationships can be considered as a key factor in successful residential treatment (Knorth et al., 2010). However, residential youth care can be seen as a “black box” (Harder & Knorth, 2015; Libby et al., 2005). In many studies, little information can be
found about the actual content of the services provided in the residential care programs under study (Knorth et al., 2008). As a result, there is also little information about how residential youth care works. To be able to improve the effectiveness of residential youth care, it is essential to gain more insight into how results can be achieved instead of merely investigating the results that are achieved (cf. Libby et al., 2005). We do know that the client-therapist relationship is important for positive treatment outcomes. However, studies investigating this relationship between adolescents and professionals in residential care are almost nonexistent. Moreover, none of the conducted studies specifically focused on one of the core activities during this mentoring relationship: one-on-one conversations between adolescents and professionals. Therefore, the current study examines both adolescent’s and mentor’s perspectives regarding their mentoring relationship and one-on-one conversations during residential care.

The first aim of this study is to examine how adolescents and professionals in residential youth care experience their mentoring relationship in terms of their individual contacts. Secondly, this study aims to explore the needs of adolescents and professionals regarding their one-on-one conversations during residential care. We will focus on the following two research questions:

1. How do adolescents and professionals experience their one-on-one conversations during residential care?
2. What are the needs of adolescents and professionals regarding their one-on-one conversations?

Given previous findings, we expect that adolescents will experience a lack of individual attention and that the conversations will mainly be focused on providing practical support. We also expect that professionals experience many difficulties in conducting one-on-one conversations with adolescents in residential care. Regarding needs, we hypothesize that the adolescents need individual support in terms of these one-on-one conversations. We also expect that adolescents need professionals who are involved, empathic, respectful, and understanding towards the adolescents.

**Method**

**Participants**

Demographic information about the 11 adolescents is shown in Table 1. Characteristics of the 12 professionals (i.e. ten group care workers and two teachers) are shown in Table 2.

**Procedure**

Group care workers and teachers who were working at one of the residential groups or at the school, and adolescents staying in the residential groups, were eligible for participation in the study. The adolescents and professionals in the research sample were recruited via ‘convenience sampling’ (Lavrakas, 2008; Ruel et al., 2015).

First, professionals were approached by a manager of the residential group or school for participating in the interviews and agreed to participate in the study. Ten group care
workers and two teachers were interviewed in the period from 16 February to 12 May 2015. Two group care workers were affiliated with the first youth care facility, eight with the other.

Secondly, adolescents were approached by the residential group care workers that participated in the study. For the present study, adolescents from only one of the two residential youth care facilities were involved, because the two residential groups of the second participating facility were involved in the research project at a later stage.

| Table 1 Characteristics adolescents (N = 11) | M   | SD (range) |
|--------------------------------------------|-----|------------|
| Age (in years)                             | 16.2| 1.0 (15–18)|
| Length of stay in current group (in months)a | 10  | 9.8 (1.5–36)|
| Expected length of stay (in months)        | 7.6 | 4.7 (3–16) |
| Previous foster and/or residential care placements | 4.5 | 5.6 (0–20) |
| Brothers/sisters                           | 2.6 | 1.8 (1–7)  |
| Gender (female)                            | 6   | 54.5       |
| Ethnicity (migration background)           | 6   | 54.5       |
| Voluntary placement (yes)                 | 6   | 54.5       |
| Placement reason                           |     |            |
| Problems at home                           | 6   | 50.0       |
| Aggression problems                        | 2   | 16.7       |
| Unsuccessful previous placement(s)        | 2   | 16.7       |
| Drugs/alcohol abuse                        | 1   | 8.3        |
| Independent living training                | 1   | 8.3        |
| Attending school during current placement  | 10  | 90.9       |

*aLength of stay in current group (in months) refers to how many months the young person stays in the residential group at the interview moment. The expected length of stay (in months) refers to the future number of months that the young person expected to stay in the residential facility

| Table 2 Characteristics professionals (N = 12) | M    | SD (range) |
|----------------------------------------------|------|------------|
| Age (in years)                               | 37.9 | 9.1 (26–54)|
| Appointment (in hours per week)              | 31.9 | 7.6 (13–40)|
| Experience of working with youth (in years)  | 10.7 | 5.6 (3–25) |
| Experience in residential youth care (in years)| 8.4 | 6.4 (0.8–25)|
| Experience in current position (in years)    | 5.2  | 3.3 (0.5–13)|
| Gender (female)                              | 5    | 41.7       |
| Highest achieved education level             |     |            |
| Secondary vocational education               | 2    | 16.7       |
| Higher vocational education                  | 9    | 75.0       |
| Academic education                           | 1    | 8.3        |
Finally, eleven young persons participated in this study and they were interviewed by the project leader of this project in a period from 16 February to 18 March 2015. The interviews were conducted at the residential facilities and during the interview only the interviewer and participant were present. The interviewer took notes during the interview and did not use audio recordings. On average, the interviews had a duration of one hour. The transcripts were not returned to participants for comments or correction, nor did the participants provide feedback on the findings. The project leader was the PhD student of the current study. She was selected for this PhD project by an application procedure with an assessment advisory committee.

Because of the procedure described above, the project leader did not establish a relationship with the participants prior to study commencement. The study was conducted according to guiding ethical principles for researchers and was approved by the Department of Child and Family Welfare of the University of Groningen. Both young people and professionals were informed about the purpose of the research project and the interviews and voluntarily participated in the interviews. Because most young people in our study were 16 years or older, we did not ask for parental consent. For the fifteen-year-old young people in our study, we received parental consent. After the interview, all adolescents received a gift card to thank them for their voluntarily contribution. The receipt of this gift card was not announced to them before the interview took place.

**Nature of the Residential Programs**

The study is aimed at adolescents and their mentor of two residential youth facilities in the north of the Netherlands. The first facility is a secure residential care facility for youth aged 12–23 years old with serious behavioral problems. One of the residential groups in this facility participated in our study. This secure residential facility is one of the 19 secure youth care facilities in the Netherlands. The goal of the group care program in this facility was to provide care and treatment in a secured environment. The adolescents only had permission to exit the facility under supervision. The purpose for which adolescents were placed was that they would leave the facility in a better condition than at entry. In 2019, 1680 young people aged 12 to 18 years old stayed in a secure youth care facility in the Netherlands, which is 0.16% of all youth aged 12 to 18 years in the Netherlands. Most of the young people in secure care are boys (62%) and their mean treatment duration is six months (Youth care Netherlands, 2020).

The main components of care and treatment in the facility were activities at the (mostly secured) residential groups and education in special education classes. The program model of the secure facility was the social competency model (Durrant, 1993; Slot & Spanjaard, 1999). This model aims to reduce young people’s problem behavior by enhancing the competence skills that are necessary to complete developmental tasks. These developmental tasks are normative demands and expectations that depend on the age of the young people. Competence can be considered as a balance between tasks and skills, which is often upset for the adolescents admitted to the facility. The model is based on the social learning theory and focuses on the stimulation of adequate behavior and on the ignorance of inadequate behavior.

From the second facility, we involved four residential groups and the school that was located with the residential groups. The goal of two residential groups was to offer independent living training for youth aged 12–18 years old who (temporarily) cannot live at home, mainly due to various problems witnessed by the youth and often also the parents.
In these residential groups there were no locked doors, so the adolescents could move around freely. The goal of the two other residential groups was to offer treatment to youth aged 12–18 years old with psychiatric and behavioral problems. One group included involuntarily placed youth who stayed in a secured environment and only had permission to exit the facility under supervision. The other group included voluntarily placed youth who stayed in a residential group without locked doors. We also included the internal school of the second facility, which offers special education to the adolescents.

The main components of care and treatment in this second facility were also activities at the residential groups and education. Some adolescents attended school at the internal school, other adolescents went to school outside the residential facility. The basic program model of the residential groups in this facility also consisted of the social competency model.

During data collection, many adolescents stayed on residential groups with a maximum of twelve adolescents, supported by two group care workers on a daily basis. The primary target group for admission for all residential groups in this study were adolescents from proximal home communities. For each residential group that was involved in the study there was a team of ten to twelve care workers who worked in morning and evening shifts of eight hours. All group care workers and teachers had to dispose of a so-called “Testimonial of good conduct” before they were hired for work in the residential facilities. Both residential facilities were part of large privately funded youth care organizations in the child welfare field offering different types of care and treatment, ranging from community care to secure residential care for youth.

During their stay, each young person has a mentor with whom (s)he has one-on-one conversations. The mentor is one of the residential group care workers. Most of these care workers have completed a vocational education in social work. When the young person also attends the school located with the residential groups, (s)he also has a mentor at school, which is one of the teachers. Teachers in these school have completed a teacher training program. The assignment of a mentor is often based upon whom is (occasionally) available at the moment of placement of a young person. The mentor is involved with the implementation of the individual treatment (or education) plan of the young person.

**Measures**

The interviews about individual needs regarding one-on-one conversations in residential youth care were specially designed for this project. The aim of the structured interviews was to assess how adolescents and professionals experience the form and contents of their one-on-one conversations and their needs regarding these conversations. We developed and used a youth version and a professional version that were both aimed at the current and the desired situation. The interviews had a similar structure and generally the same contents, which made it possible to compare the different perspectives.

The questions in the youth interview concerned the following six topics: (1) the design, (2) contents, (3) usefulness and (4) goal directedness of the conversations, (5) the alliance and treatment by professionals, and (6) the satisfaction of adolescents with the conversations (e.g., what would you like to change about the conversations with your mentor?). The professional’s interview concerned the following seven topics: the (1) design and (2) contents of the conversations, (3) treatment motivation and (4) behavior change of the young person, (5) the alliance and treatment by professionals, (6) knowledge about, attitude towards and experience with Motivational Interviewing, and (7) satisfaction of
professionals with the conversations (e.g., how do you try to achieve behavioral change with the young person?).

**Research Design**

This study is part of a research project aimed at the development of the Up2U treatment program for adolescents and professionals in residential youth care in the Netherlands. The program aims at improving the one-on-one conversations of professionals with youth during residential treatment. The intention of the one-on-one interactions between the youth residents and staff is both informal relationship building to offer help and support as needed, and therapeutic, i.e. having a mutually agreed upon goal to achieve. In developing the Up2U treatment program, our first step was to conduct a qualitative study in which we mapped the needs of adolescents and professionals in residential youth care regarding their one-on-one conversations by structured interviews. The present explorative study is based on data obtained during these interviews. We declare that we have no conflict of interest.

**Data Analysis**

The leading female researcher, Msc and PhD student at the time of the study who completed a University education in special needs education and youth care, and two assistant researchers analyzed the interview data of adolescents and professionals by content analysis using ‘open coding’ (Boeije, 2005). The coding tree that we used was based on the topics of the interviews (see Interview for the specific topics), so the themes were mostly identified in advance. Fragments from the interview transcripts were marked for the answer to each question and labeled with a name (code). The fragments were then compared to assess differences and similarities in answers between respondents. Fragments representing a comparable answer, were given the same code. These codes or categories were inserted in the program Statistical Package for the Social Sciences (SPSS, version 23). For the answers to each interview question, we conducted descriptive analyses to describe the number of respondents and their different or similar type of answers. For some answers it was not possible to allocate codes, due to the diversity of answers. Therefore, the responses were stated verbatim.

**Results**

**Aims and Topics of Conversations**

According to the adolescents, the one-on-one conversations with professionals had various aims (see Table 3).

Professional also mentioned various aims of their one-on-one conversations with youth during residential care (see Table 4).

The three professionals who mentioned ‘gain insight into the young person’ as aim of the conversations, described that this can refer to gaining insight into what the young person does, how it's going, how things are with his/her goals, and whether there are questions for help.
Adolescents and professionals mentioned that their conversations have different topics, but the most often mentioned one is how it’s going with the adolescent. The topics that were mentioned by both adolescents and professionals are shown in Table 5.

Other topics mentioned by the adolescents are the residential group (mentioned twice), therapy, friends, makings appointments, language use, feedback from earlier conversations, and how things work in the youth care facility. The professionals also frequently mentioned behavior, practical matters/arrangements, and the network of the young person as topics (all mentioned four times). Social-emotional functioning were mentioned by two professionals. Other topics mentioned by professionals were feedback, developmental tasks, hygiene, and sexuality.
Difficult Topics and Situations

Nine adolescents (81.8%) could mention topics that they find difficult to talk about with their mentor. The difficult topic that was mentioned most often by five adolescents (55.6%) is their family, including specifically father (33.3%), the situation at home (22.2%), and parents (11.1%). Second, four adolescents (44.4%) mentioned personal things, including sexuality, drugs, fears, uncertainties/self confidence and trust issues, which were each mentioned by one adolescent. Three adolescents (33.3%) mentioned things from the past as difficult topic, including primary school and traumatic topics, which were each mentioned by one adolescent. One adolescent mentioned that it is difficult to talk about everything, because of constant changes in personnel. When she finally builds a bond ‘then they go away again and I have to start over again building a bond with someone else’. This made it difficult for her to talk about all topics.

The care workers mostly mentioned other topics than the adolescents that they consider difficult. Conversations about sexuality and conversations in which a discussion flares up were both mentioned twice. Confronting conversations, bad news conversations, and situations when there is much sadness/powerlessness with the young person, if the young person is lying, young people cutting themselves, and having conversations with young girls were all mentioned once by the care workers as difficult. Two care workers did not think that there are difficult conversations.

Satisfaction with One-on-One Conversations

Six adolescents (54.5%) were positive about the one-on-one conversations with their mentor. Three adolescents mentioned both pros and cons of their conversations. Two adolescents were less positive and considered the conversations boring and not supportive in the long run (‘because my past stays my past’). Six adolescent (54.5%) mentioned that they do not necessarily have a need for one-on-one conversations, because (s)he thinks it is annoying to explain his/her story to everybody, does not like talking one-on-one, rather does his/her own thing, rather finds a solution him/herself, thinks it takes too long or does only want to have a conversation if it is useful to him/herself.

Most adolescents (72.8%) and professionals (66.6%) were (very) satisfied with their conversations. Three adolescents (27.3%) and one professional (8.3%) responded neutrally or with having no opinion, and three professionals (25%) were dissatisfied regarding their one-on-one conversations.

Table 5 Topics of one-on-one conversations according to both adolescents and professionals

| Topic                   | Adolescents (N=11) | Professionals (N=12) |
|-------------------------|---------------------|----------------------|
|                         | N       | %     | N       | %     |
| How it’s going          | 8       | 72.2  | 4       | 33.3  |
| School/internship/work  | 7       | 63.6  | 2       | 16.7  |
| Future                  | 2       | 18.2  | 2       | 16.7  |
| Daily things            | 2       | 18.2  | 2       | 16.7  |
| (Learning) goals        | 2       | 18.2  | 2       | 16.7  |

Some adolescents and professionals gave more than one answer
conversations. According to the professionals, there was enough time for conversation, the frequency was good, and in between the conversations there was opportunity to tell the young person what (s)he should do. Professionals also liked that the conversations were obligated, so that the young person can be given enough attention. They also liked to work with a guidebook during the conversation, and they preferred that the location of the conversation was determined by the young person. Several professionals indicated that the relationship with the young persons was good and that the young persons were motivated to have conversations with them.

**Strategies to Establish Good Contact and to Achieve Change with Adolescents**

All professionals thought that having a connection with the young person is important. To establish good contact with the adolescents, five professionals mentioned their personal characteristics such as being honest, respectful, clear, empathic, and humorous as strategies. Furthermore, adjusting the conversation to the level of the young person and building a bond/relationship with the young person were both mentioned by three professionals. Two professionals mentioned that they try to make the young person feel appreciated. Other strategies were to impose no time pressure, to tell a lot about him/herself and to be open, causing the young person also to be more open to the professional, and to approach the young person "with a detour" instead of straightforward.

One professional thought that it is his core task to achieve behavior change with the young person. Four others considered this partly as their task. These four professionals mentioned that it is also the task of the young person him/herself and that they can support the young person, but that in the end (s)he should do it him/herself. Another professional thought that it is dependent on the behavior of the young person and considers achieving behavior change his/her task if a young person has a negative self-image. One professional did not consider achieving behavior change with the young person as his task, but completely the task of the young person. However, he did want to support the young person in this.

The professionals had different approaches to achieve change with the young people. One professional mentioned that it is important to have a good relationship, another thought that you should take time to make the young person aware of the importance of behavior change. Professionals mentioned different ways to connect with the young people during a conversation, such as choosing an approach that fits with the young person, a positive approach to the young person, and giving young people the feeling that they are listened to. Furthermore, professionals mentioned structuring activities (recording advice and tasks), the use of a model including an activating event, thoughts, feelings, behavior and consequences (i.e. cognitive-behavioral therapy (CGT) based ABC model) to assess how the adolescent copes with certain situations, and to detect dysfunctional behavior patterns. The professionals also used different ways to explain things to the adolescents, including giving examples from their own lives, giving the right advice, giving a realistic picture of reality, raising awareness, asking questions, and linking occurring events to a treatment goal.

**Adolescent Learning, Behavior Change and Goal Achievement Through Conversations**

Eight adolescents mentioned different things that they have learned from the conversations with their mentor (see Table 6).
One of the two adolescents saying they learned nothing mentioned that she does not really have to learn anything; the other mentioned that she can ‘get the thought off her mind’ but does not learn anything.

Most (63.6%) of the 11 adolescents thought that they have not changed by the conversations or do not know whether changes are caused by the conversations. Three adolescents (27%) mentioned that they did change as a result of the conversations with their mentor. In addition, one adolescent indicated that she has changed through individual conversations, but the change was not due to conversations with her mentor, but due to a flex worker. This flex worker had more time for the adolescent, was more flexible about all topics, ‘was himself’, and told about himself.

Nine adolescents answered to the question whether they think they achieved their goals through the conversations. A third thought that they did achieve their goals through the conversations and indicated that their mentor is strongly focused on them and knows exactly what the goals are. Even if something goes wrong the young person got directions and could achieve the goals thanks to their mentor. Another third did not think that they achieve their goals through the conversations. The other third was less clear in their answer. One of these adolescents said: ‘Yes and no. The mentor does help me well, if one fails then we try something different, but we do not progress’. Another adolescent mentioned that is partly by the conversations and that the conversations were only helpful if he does something about it himself and that it does not help if the mentor just says what the young person should do.

### Professionals’ Use of and Need for Treatment Methods During Conversations

Nine (75%) professionals did not use a specific treatment protocol or method during the one-on-one conversations, one professional (8.3%) sometimes did, and two professionals indicate that they did (16.7%) by using a format. The conversations were often based on professional’s own instincts, so that each professional could do this in his/her own way. Questions asked during a one-on-one conversation mostly depended on the young person and the issues that were involved. Two professionals indicated that they used their own list,
which served as a kind of agenda. One professional mentioned that there was a sort of format that included what needs to be discussed, but that he did not use this, because it ‘feels fake’.

Nine professionals (75%) doubted whether they want to have conversations according to a manual, protocol or support tool, two professionals (16.7%) did not, and one professional (8.3%) did want this. A format or checklist and scale questions to use during conversations were examples that are mentioned several times. Many professionals indicated that using a manual, protocol or support tool is depending on the young person, his/her concentration level, age and gender. Two professionals advised against the use of a computer or tablet, because then they would have less contact with the young person and the young person would be afraid that the professionals were writing everything down. One professional was in favor of using a computer/tablet.

Six professionals (50%) mentioned that using a manual, protocol or support tool should not be obligatory and rather take place on their own initiatives. Creative tools could be supportive but should not be implemented too formally. If it is too suppressive, then it is possible that the conversation would become too stiff, serious or planned, and lead to ‘resistance’ with the young person. When a tool is used too formally, it is possible that adolescents take it less seriously and ‘rush’ the conversation. Two professionals did not have the desire to use a manual, protocol or tool, because it would distract and then “… you miss the eye contact and mimic of the young person or questions should develop spontaneously, not because you must”.

**Adolescents’ Needs Regarding Professionals’ Approach During Conversations**

All adolescents knew how the mentor could treat them in the best way (see Table 7).

One adolescent who mentioned listening as important said: ‘The mentor should listen to me when I am telling and should make jokes in between. He should not speak at once’.

| How a mentor should treat the young person (N=11)                                      | N  | %   |
|---------------------------------------------------------------------------------------|----|-----|
| Show calm behavior                                                                    | 6  | 54.5|
| Stay patient/calm                                                                      | 5  | 45.6|
| Take the time for it                                                                   | 2  | 18.2|
| Be understanding                                                                      | 2  | 18.2|
| Have respect and do not interfere                                                     | 5  | 45.6|
| Be reluctant with giving his/her own opinion                                           | 2  | 18.2|
| Do not whine/ get pushy                                                                | 1  | 9.1 |
| Do not interfere with my attitude and how I eat                                        | 1  | 9.1 |
| Treat me in a normal way                                                               | 1  | 9.1 |
| Have respect for me                                                                    | 1  | 9.1 |
| Listen and show interest                                                               | 4  | 36.4|
| Listen                                                                                | 3  | 27.3|
| Let me finish                                                                          | 3  | 27.3|
| Show interest in me                                                                    | 1  | 9.1 |
| Do not shout                                                                           | 3  | 27.3|

Some adolescents gave more than one answer
One of the three adolescents who said that the mentor should not shout indicated: ‘Do not shout, because that makes me angry. If it is a man, then I am actually afraid when they scream, but I do stand up for myself’. The adolescent who said that the mentor should have respect for him/her mentions: ‘I am not a lapdog; I am not docile and I want to take my own decisions. I feel bad if I am not treated as a human being, I don’t want to be a group number. I get into resistance if the care workers give me the feeling that I am a client, not a human.’

Other ways in which the mentor can treat the adolescent were ‘asking open questions to me’, ‘giving reasons and advise’, ‘should be able to talk well and may change the subject too’, ‘should also mention the good things, not just the bad things’, and ‘do not be too serious otherwise it seems too official, but (s)he should be serious if you really need anything’.

**Need for Improvement of One-on-One Conversations**

Seven adolescents mentioned different points to improve the one-on-one conversations with their mentor. First, three adolescents mentioned that the conversations should be shortened and two adolescents that the conversations should be conducted privately. Other improvements that could be made were: having consultation about the moment a conversation can take place, having conversations less frequently, having outings with the mentor more frequently, discussing/determining goals, discussing broad topics, take more time for it, listen better, and doing something with what has been said. Adolescents also mentioned that young people should formulate their own goals and that conversations should be aimed at the target group and the individual young person. Furthermore, “… undertake activities for the purpose of the relationship between mentor and young person”, and “… do not recall things that have happened before if something small happens that looks like it”, were mentioned by the adolescents. Another point for improvement according to one adolescent was that “there should be no fixed moments planned for the conversation, but that you can approach someone when you are in need for a conversation”.

The professionals also mentioned different points of improvement. First, there should be more attention for their own competences, and they should stay involved with the follow-up trajectory of the young people. Some professionals wondered whether what they do has an effect, sometimes do not know what to do, and are not always able to get a lot out of the conversations. Professionals also mentioned that little of the conversations resonates with the young people, that there should be more individual attention to the young person, and that there should be more space for the young people to put a topic forward or bring things into the conversation him/herself. Furthermore, goals can be improved, the conversations could be made more substantive, and more focused on the future instead of daily concerns. There should also be more attention to the implementation of training courses that have been followed by professionals.

**Discussion**

The aim of this study was to examine how adolescents and professionals in residential youth care experience their individual contacts and needs regarding their one-on-one conversations during care. According to the adolescents, these conversations often aim at achieving improvement, such as feeling better. According to the professionals, achieving goals and gaining insight into the adolescent are the most frequent aims of the conversations. This
does not correspond with our expectation that the conversations would mainly be focused on providing practical support. Adolescents mostly consider their family and situation at home as difficult topics (cf. Harder et al., 2017), while care workers mostly consider sexuality as a difficult topic to talk about. Regarding the experiences with their individual contacts, both the adolescents and professionals are generally satisfied. We expected, however, that adolescents would experience a lack of individual attention and that professionals would experience many difficulties. Although the adolescents by and large were satisfied, a majority does not necessarily have a need for these conversations, while we expected that the adolescents really needed this type of individual support. This might be related to adolescents’ ideas about such conversations: risking more of an ‘interrogation’ than a dialogue, and this is something young people do not welcome at all, especially if questions (implicitly) are pursuing a certain normative angle (Damour, 2016; McMullin, 2018).

Although most adolescents do not necessarily have a need for one-on-one conversations, they prefer a mentor who is calm, has respect, listens to the adolescent, and is reluctant in giving advice, which is consistent with other research findings on professional’s treatment skills that associate with a positive therapeutic relationship (Harder et al., 2013; Schottke et al., 2017). This corresponds with our expectation that adolescents need professionals who are involved, empathic, respectful, and understanding towards the adolescents. The adolescents think the way the mentor relates to them during the conversations is very important. Professionals also think that having a connection with the young person is important. According to Clough, Bullock & Ward (2004, p. 118) ‘… it is not surprising that the quality of the relationship between adult carer and child is frequently cited as a key factor in successful practice’. However, only one of the twelve professionals in our study thinks that it is his core task to achieve behavior change with the young person. This suggests that residential care workers mainly focus on care and not on cure, while both these aspects are essential to therapeutic residential care (Harder, 2018; Whittaker et al., 2016).

To establish good contact and to achieve change with the adolescents, professionals use various strategies. Most professionals do not use a specific treatment protocol or method during the one-on-one conversations. The conversations are often based on professional’s own instincts, so that each professional can do this in his/her own way (see also Knorth et al., 2010; Wigboldus, 2002). Most professionals also doubt whether they want to have conversations according to a manual, protocol or support tool. This corresponds with other research findings showing that social work practitioners encounter challenges with the application of manualized evidence-supported treatments (Barth et al., 2012). The findings suggest that manuals might not be useful in mentoring relationships during residential treatment. However, it is also known from research that almost all existing manualized, diagnostic-specific evidence-based practices are neither designed for nor tested in residential youth care (Lee & McMillen, 2017).

There seems to be quite some room for improvement of the one-on-one conversations, because most of the adolescents think that they have not changed (or do not know whether they have) as a result of the individual contacts with their mentor. Moreover, both adolescents and professionals mention different points of improvement. Adolescents stress the importance of having short(er) conversations in a private environment with professionals. Professionals emphasize the need of making conversations more future-oriented, more substantive, and to perform with a higher level of professionalism (see for comparable findings: Lindsay, 2018).

In terms of limitations, we note that ‘convenience sampling’ was applied. As a result, we have missed those young people who did not want to participate. This group might have shown other needs regarding individual contacts in case they would have
participated in the study. Another point is that the sample is rather small and restricted to the population of two youth care organizations in the northern Netherlands. Therefore, results cannot be generalized to other youth care organizations. We recommend future studies to include a more extensive research sample.

In the current study we made use of structured interviews. These structured interviews limited the depth of insight into the perspectives of youth and professionals. The interviews did, however, include many open questions. An advantage is that a rich quantity of information can be gathered. A drawback is that answers are not always comparable which might hamper a clear and compact presentation of results. For future research, we suggest to use a combination of a quantitative (survey questionnaires) and qualitative (in-depth interviews) approach to investigate the experiences and needs of young people and professionals on receiving and offering individual support, respectively, in residential youth care in our country (and beyond).

A strength of this study is that, notwithstanding the sample restrictions, we were able to zoom in on the mentoring relationship and give an impression of the current situation regarding one-on-one conversations between young people and professionals working in residential youth care. The needs of the young people as well as those of the involved professionals could be mapped adequately. This paper offers a lot of ingredients to further develop an intervention—a model for individual client-professional conversations, including a training course for such conversations—which matches the target group under study.

Looking back at the results, we can conclude that residential staff members in our sample do see room for further enhancing the quality of their work as a mentor during one-on-one conversations in care. At the same time, we doubt whether professionals consider this as a top priority, because of their satisfaction with the one-on-one conversations and their reserves regarding the use of a (new) manual, protocol or support tool.

One way to further explore the situation is to develop and evaluate an evidence- and experience-informed model or program for one-on-one conversations, thereby also making clear what should be expected of professionals in their contacts with young people in care. After all, considering the fact that the care workers in our study differed in their ideas about whether it is their task to achieve behavior change with young persons or not, it is recommendable to include a training course in the model that helps participants to better understand how they can fulfil a therapeutic role during mentoring conversations. If it is not clear what their therapeutic tasks are in combination with being the ‘key professional’ (Autor’s own, 2010), residential care centers never will be able to realize the ambition to perform as an evidence-based, therapeutic type of services (Whittaker et al., 2016).

On the other hand, if facilitated well by their management staff, residential workers can be a significant force in realizing high quality care for those young people who cannot live at home anymore. Or to put it more clearly: workers receiving support and supervision from within their residential care organization in conducting the program is an indispensable condition (James, 2017).

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References

Ahrens, K. R., DuBois, D. L., Richardson, L. P., Fan, M. Y., & Lozano, P. (2008). Youth in foster care with adult mentors during adolescence have improved adult outcomes. *Pediatrics, 121*(2), e246–e252. https://doi.org/10.1542/peds.2007-0508

Barth, R. P., Lee, B. R., Lindsey, M. A., Collins, K. S., Strieder, F., Chorpita, B. F., Becker, K. D., & Sparks, J. A. (2012). Evidence-based practice at a crossroads: The timely emergence of common elements and common factors. *Research on Social Work Practice, 22*(1), 108–119. https://doi.org/10.1177/1049731511408440

Boeije, H. (2005). *Analyseren in kwalitatief onderzoek*. Boom Uitgeverij.

Boendermaker, L., Van Rooijen, K., Berg, T., & Bartelink, C. (2013). *Residentiële jeugdzorg: Wat werkt? [residential youth care: What works?]*. Netherlands Youth Institute. Retrieved from http://www.nji.nl/nl/Watwerp ResidentieleJeugdzorg.pdf

Cavell, T. A., Meehan, B. T., Heffer, R. W., & Holladay, J. J. (2002). The natural mentors of adolescent children of alcoholics (COAs): Implications for preventive practices. *Journal of Primary Prevention, 23*(1), 23–42.

Clough, R., Bullock, R., & Ward, A. (2004). *Review of fostering and residential care: Literature review*. National Assembly for Wales.

Connor, D. F., Doerfler, L. A., Toscano, J., Volungis, A. M., & Steingard, R. J. (2004). Characteristics of children and adolescents admitted to a residential treatment center. *Journal of Child & Family Studies, 13*(4), 497–510. https://doi.org/10.1023/B:JCFS.0000044730.66750.57

Damour, L. (2016). *Untangled: Guiding teenage girls through the seven transitions into adulthood*. Atlantic Books.

DuBois, D. L., Holloway, B. E., Valentine, J. C., & Cooper, H. (2002). Effectiveness of mentoring programs for youth: A meta-analytic review. *American Journal of Community Psychology, 30*(2), 157–197.

Durrant, M. (1993). *Residential treatment: A cooperative, competency-based approach to therapy and program design*. W.W. Norton & Company.

Florsheim, P., Shotorbani, S., Guest-Warnick, G., Barratt, T., & Hwang, W. C. (2000). Role of the working alliance in the treatment of delinquent boys in community-based programs. *Journal of Clinical Child Psychology, 29*(1), 94–107. https://doi.org/10.1207/S15374424jccp2901_10

Geenen, M. (2017). A tailored approach for incarcerated boys: Q study into the needs of incarcerated boys in the interaction with group workers in a juvenile correctional institution. *Residential Treatment for Children & Youth, 34*, 227–243. https://doi.org/10.1080/0886571X.2017.1370408

Grooters, G., De Swart, J., Lohuis-Heesink, R., & Moonen, X. (2013). Eind goed, al goed? Voortijdige beëindiging van residentiële hulpverlening aan jeugdigen met licht verstandelijke beperking: Omvang en samenhangende factoren [All’s well that ends well? Premature departure of residential care for youth with mild intellectual disabilities: Prevalence and co-occuring factors]. *Onderzoek & Praktijk, 11*, 6–16.

Harder, A. T. (2018). Residential care and cure: Achieving enduring behavior change with youth by using a self-determination, common factors and motivational interviewing approach. *Residential Treatment for Children & Youth, 35*(4), 317–335. https://doi.org/10.1080/0886571X.2018.1460006

Harder, A. T., Huyghen, A. N., Knot-Dickscheit, J., Kalverboer, M. E., Königeter, S., Zeller, M., & Knorth, E. J. (2014). Education secured? The school performance of adolescents in secure residential youth care. *Child & Youth Care Forum, 43*(2), 251–268. https://doi.org/10.1007/s10566-013-9232-z

Harder, A. T., & Knorth, E. J. (2015). Uncovering what is inside the ‘black box’ of effective therapeutic residential youth care. In J. K. Whittaker, J. F. del Valle & L. Holmes (Eds.), *Therapeutic residential care for children and youth developing evidence-based international practice* (pp. 217–228). Jessica Kingsley Publishers.
Harder, A. T., Knorth, E. J., & Kalverboer, M. E. (2012). Securing the downside up: Client and care factors associated with outcomes of secure residential youth care. *Child and Youth Care Forum, 41*(3), 259–276. https://doi.org/10.1007/s10566-011-9159-1

Harder, A. T., Knorth, E. J., & Kalverboer, M. E. (2013). A secure base? The adolescent-staff relationship in secure residential youth care. *Child and Family Social Work, 18*(3), 305–317. https://doi.org/10.1111/j.1365-2206.2012.00846.x

Harder, A. T., Knorth, E. J., & Zandberg, T. (2006). Residentiële jeugdzorg in beeld: Een overzichtsstudie naar de doelgroep, werkwijzen en uitkomsten [Residential youth care in the picture: A review study of its target group, methods and outcomes]. SWP Publishers.

Huefner, J. C., Ringle, J. L., Thompson, R. W., & Wilson, F. A. (2018). Economic evaluation of residential length of stay and long-term outcomes. *Residential Treatment for Children & Youth, 35*(3), 192–208.

Jager, M. (2016). *Unraveling the role of client-professional communication in adolescent psychosocial care*. (Unpublished PhD thesis). University of Groningen.

James, S. (2017). Implementing evidence-based practice in residential care: How far have we come? *Residential Treatment for Children & Youth, 34*(2), 155–175. https://doi.org/10.1080/0886571X.2017.1332330

Karver, M. S., Handelsman, J. B., Fields, S., & Bickman, L. (2006). Meta-analysis of therapeutic relationship variables in youth and family therapy: The evidence for different relationship variables in the child and adolescent treatment outcome literature. *Clinical Psychology Review, 26*(1), 50–65. https://doi.org/10.1016/j.cpr.2005.09.001

Knorth, E. J., Harder, A. T., Huyghen, A. M. N., Kalverboer, M. E., & Zandberg, T. (2010). Residential youth care and treatment research: Care workers as key factor in outcomes? *International Journal of Child and Family Welfare, 13*(1–2), 49–67.

Knorth, E. J., Harder, A. T., Zandberg, T., & Kendrick, A. J. (2008). Under one roof: A review and selective meta-analysis on the outcomes of residential child and youth care. *Children and Youth Services Review, 30*(2), 123–140. https://doi.org/10.1016/j.childyouth.2007.09.001

Lavrakas, P. (2008). *Encyclopedia of survey research methods*. Sage.

Lee, B. R., & McMillen, J. C. (2017). Pathways forward for embracing evidence-based practice in group care settings. *Journal of Emotional and Behavioral Disorders, 25*(1), 19–27. https://doi.org/10.1177/1063426616688210

Leloux-Opmeer, H., Kuiper, C., Swaab, H., & Scholte, E. (2016). Characteristics of children in foster care, family-style group care, and residential care: A scoping review. *Journal of Child and Family Studies, 25*(8), 2357–2371. https://doi.org/10.1007/s10826-016-0418-5

Libby, A. M., Coen, A. S., Price, D. A., Silverman, K., & Orton, H. D. (2005). Inside the Black Box: What constitutes a day in a residential treatment centre? *International Journal of Social Welfare, 14*, 176–183.

Lindsay, M. (2018). Building a professional identity: The challenge for residential child and youth care. In E. J. Knorth, P. M. v. d. Bergh & F. Verheij (Eds.), *Professionalization and participation in child and youth care: Challenging understandings in theory and practice* (pp. 75–86). Routledge – Taylor & Francis Group.

Lipsey, M. W. (2009). The primary factors that characterize effective interventions with juvenile offenders: A meta-analytic overview. *Victims & Offenders, 4*(2), 124–147.

Lyons, J. S., Obeid, N., & Cummings, M. (2015). Needs and characteristics of high-resource using youth: North america. In J. K. Whittaker, J. F. del Valle, & L. Holmes (Eds.), *Therapeutic residential care for children and youth developing evidence-based international practice* (pp. 62–70). Jessica Kingsley Publishers.

Marsh, S. C., & Evans, W. P. (2009). Youth perspectives on their relationships with staff in juvenile correction settings and perceived likelihood of success on release. *Youth Violence and Juvenile Justice, 7*(1), 46–67. https://doi.org/10.1177/154204008324484

Massinga, R., & Pecora, P. J. (2004). Providing better opportunities for older children in the child welfare system. *The Future of Children, 14*(1), 150–173.

McLeod, B. D. (2011). Relation of the alliance with outcomes in youth psychotherapy: A meta-analysis. *Clinical Psychology Review, 31*(4), 603–616. https://doi.org/10.1016/j.cpr.2011.02.001

McMullin, C. (2018). Building relationships with young people: A model for practice. *Relational Social Work, 2*(2), 50–60.
Munson, M. R., & McMillen, J. C. (2009). Natural mentoring and psychosocial outcomes among older youth transitioning from foster care. *Children and Youth Services Review, 31*(1), 104–111. https://doi.org/10.1016/j.childyouth.2008.06.003

Palareti, L., & Berti, C. (2010). Relational climate and effectiveness of residential care: Adolescent perspectives. *Journal of Prevention & Intervention in the Community, 38*(1), 26–40.

Ruel, E. E., Wagner, W. E., & Gillespie, B. J. (2015). *The practice of survey research: Theory and applications*. SAGE Publications.

Schottke, H., Fluckiger, C., Goldberg, S. B., Eversmann, J., & Lange, J. (2017). Predicting psychotherapy outcome based on therapist interpersonal skills: A five-year longitudinal study of a therapist assessment protocol. *Psychotherapy Research, 27*(6), 642–652. https://doi.org/10.1080/10503307.2015.1125546

Shirk, S. R., & Karver, M. (2003). Prediction of treatment outcome from relationship variables in child and adolescent therapy: A meta-analytic review. *Journal of Consulting and Clinical Psychology, 71*(3), 452–464. https://doi.org/10.1037/0022-006X.71.3.452

Slot, N. W., & Spanjaard, H. J. M. (1999). *Competentievergroting in de residentiële jeugdzorg: Hulpverlening voor kinderen en jongeren in tehuizen [Expanding competency in residential child and youth care: Support for children and young people in residential homes and institutions]*. Intro Publishers.

Sulimani-Aidan, Y. (2017). ‘She was like a mother and a father to me’: Searching for the ideal mentor for youth in care. *Child & Family Social Work, 22*(2), 862–870. https://doi.org/10.1111/cfs.12306

Thoburn, J. (2016). Residential care as a permanence option for young people needing longer-term care. *Children and Youth Services Review, 69*, 19–28. https://doi.org/10.1016/j.childyouth.2016.07.020

Tolan, P., Henry, D. B., Schoeny, M. S., Lovegrove, P., & Nichols, E. (2014). Mentoring programs to affect delinquency and associated outcomes of youth at-risk: A comprehensive meta-analytic review. *Journal of Experimental Criminology, 10*(2), 179–206.

Tolan, P., Henry, D., Schoeny, M., & Bass, A. (2008). *Mentoring interventions to affect juvenile delinquency and associated problems*, No. 16. Campbell Systematic Reviews. https://doi.org/10.4073/csr.2008.16

Van Binsbergen, M. H. (2003). *Motivatie voor behandeling: Ontwikkeling van behandelmotivatie in een justitiële instelling [Motivation for treatment: Development of motivation for treatment in a secure residential facility]* (Unpublished PhD thesis). University of Leiden.

Wampold, B. E. (2015). How important are the common factors in psychotherapy? An update. *World Psychiatry, 14*(3), 270–277.

Whittaker, J. K., Holmes, L., Del Valle, J. F., Ainsworth, F., Andreassen, T., Anglin, J., Bellonci, C., Berridge, D., Bravo, A., Canali, C., Courtney, M., Currey, L., Daly, D., Gilligan, R., Grietens, H., Harder, A., Holden, M., James, S., Kendrick, A., Knorh, E., Lausten, M., Lyons, J., Martin, E., McDermid, S., McNamara, P., Palareti, L., Ramsey, S., Sisson, K., Small, R., Thoburn, J., Thompson, R., Zeira, A. (2016). Therapeutic residential care for children and youth: A consensus statement of the international work group on therapeutic residential care. *Residential Treatment for Children & Youth, 33*(2), 89–106. https://doi.org/10.1080/0886571X.2016.1215755

Wigboldus, E. H. M. (2002). *Opvoedend handelen in een justitiële jeugdinrichting: Systematisering van het behandelaanbod binnen rentray [Child rearing in a judicial youth institution: Systematization of the care program at the rentray treatment center]* (PhD thesis). Garant publishers.

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