


Academic Paper

A mixed methods study of effects and antecedents of solution-focused questions in coaching

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Abstract

The coaching interaction regarding questioning is still under-researched. This study investigates clients' behavioural responses to coaches' solution-focused questions (SFQ), their effects on coaching outcomes, and coaches' career-related attributes promoting SFQ. Using a mixed methods design, we applied longitudinal self-report and behavioural data for 23 coach-client dyads. Lag sequential analyses and regressions revealed coaches' SFQ to elicit clients' solution and self-efficient statements and the importance of coaches' career adaptability for SFQ. Our findings contribute to the improvement of coaching and training programmes by providing practitioners with knowledge of micro level coaching processes. The possibility of coaches' role modelling is discussed.

Keywords

Solution-focused questions, Coaching interaction, Behavioural data, Career-related attributes ,

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Introduction

After two decades of comprehensive research on coaching as a collaborative, interactional process facilitating clients' goal attainment (Grant, Cavanagh, Parker, & Passmore, 2010), the question if coaching is effective has revealed that coaching positively affects diverse outcomes such as performance, work attitudes, goal attainment (Theeboom, Beersma, & van Vianen, 2014), behavioural change, self-efficacy (Sonesh et al., 2015), and goal orientation (Bozer & Jones, 2018). However, the questions of how coaching works and which factors affect the coaching process remain vital topics (Fillery-Travis & Cox, 2014; Kauffeld & Gessnitzer, 2018; Theeboom, Beersma, & van Vianen, 2016). Coaching research has considered the coach-client-relationship as an important factor for coaching success (Baron & Morin, 2009; de Haan, Grant, Burger, & Eriksson, 2016; Graßmann, Schölmerich, & Schermuly, 2019). Nevertheless, there is a substantial

research gap with respect to the coaching interaction itself. Fillery-Travis and Cox (2014, p. 453) state that:

the coaching activity itself, the interaction of the dyad including the elements of listening, questioning, clarifying, reflecting, challenge, and thinking have simply not yet been researched.

Since questions are the core of the coaching conversation (Clarke & Dembkowski, 2006; Grant & O'Connor, 2010), and even referred to as “the most powerful element for coaching” (Cox, 2013, p. 9), the specific need for research examining coaches’ use of questions and their influence on clients is addressed (Fillery-Travis & Cox, 2014; Wallis, 2016).

Based on their positive effects in solution-focused brief therapy, solution-focused questions (SFQ) arouse the interest of coaching researchers and practitioners (Cavanagh & Grant, 2010). This questioning technique focuses on solutions, resources, and possibilities rather than on problems and their causes (de Shazer et al., 1986). Although several studies in the last few years found positive effects of SFQ (Grant, 2016; Grant & O'Connor, 2010, 2018; Neipp, Beyebach, Nuñez, & Martínez-González, 2016; Theeboom et al., 2016; Visser, 2011; Wehr, 2010), there are some research gaps and methodological shortcomings. First, current SFQ-research has mainly focused on effects on client outcomes, such as well-being (Grant, 2016), positive mood (Wehr, 2010), and cognitive flexibility (Theeboom et al., 2016). In contrast, an investigation of the effect of coaches’ SFQ on clients on a behavioural level has been neglected so far, mainly because SFQ-research lacks methods that are suitable to uncover processes within the coaching interaction. Regarding other coaching research issues, such as working relationship (Gessnitzer & Kauffeld, 2015), interpersonal dominance and affiliation (Ianiro, Lehmann-Willenbrock, & Kauffeld, 2015), and empathy (Will, Gessnitzer, & Kauffeld, 2016), there are a few studies depicting the actual coaching interaction by the use of observational data.

By contrast, in SFQ-research data are often simply gathered by questionnaires, self-report measures, or online (Grant & O'Connor, 2018). Consequently, there is a need for objective behavioural indicators (Grant & O'Connor, 2010) and research methods such as interaction analysis (Fillery-Travis & Cox, 2014). Second, there is a lack of research investigating coach attributes promoting the use of SFQ. A study examining coaches’ generation of questions revealed that their personal history, education, philosophy, and current state influence the way they question clients (Wallis, 2016). However, this study is solely based on personal experiences of eight skilled coaches and did not specifically consider SFQ. Despite first hints that coaches’ career-related attributes, such as career adaptability and goal orientation, influence clients’ coaching success (Jordan, Gessnitzer, & Kauffeld, 2017), there is no research examining these effects in-depth. A consideration if these career-related coach attributes also manifest in coaches’ SFQ, which in turn might influence clients’ behaviour and coaching outcomes, would contribute to a broader knowledge of input-process-output factors as proposed in the Leadership Coaching Framework (Boyce & Hernez-Broome, 2011).

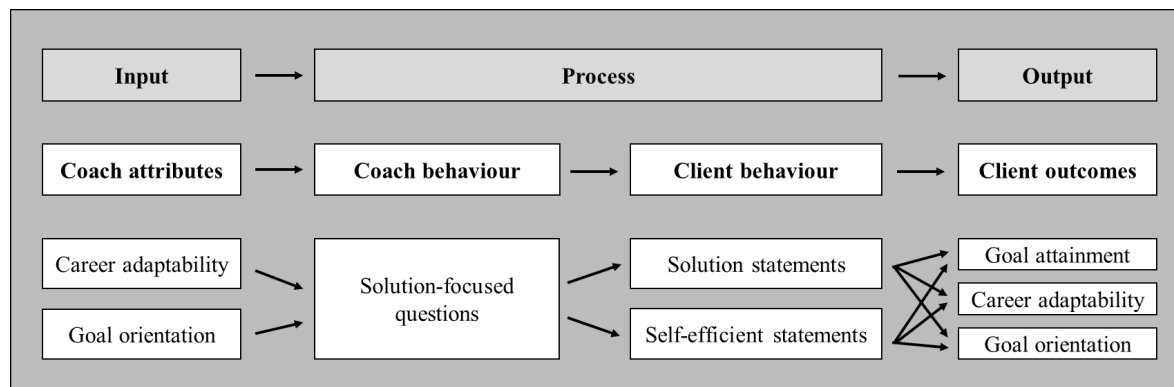
With regard to the addressed research gaps and based on input-process-output models, we aim to analyse the coaching process at a micro level. We first investigate clients’ behavioural responses to coaches’ SFQ. Second, we consider relations between client behaviour during the conversation and coaching outcomes. Third, we examine effects of coaches’ career-related attributes on coaches’ SFQ. For this purpose, we apply longitudinal self-report and behavioural data in a mixed methods design in the context of a career-coaching programme. In doing so, our study provides important insights into the coaching process and some of its mechanisms, namely the use of coaches’ SFQ, and thereby contributes to theoretical knowledge about effects and antecedents of coaches’ SFQ. The analysis of behavioural data enables the unbiased investigation of the actual coach-client-interaction at a micro level, which has important practical implications. Coaches can learn about the possible impact of their SFQ during the conversation and thus consistently and consciously make use of this questioning technique. With regard to training programmes for

coaches, our study illustrates important consequences for educational contents and behaviours that should be intensively trained.

Coaching: Considering Input, Process, Output

Based on input-process-output models (e.g., Boyce & Hernez-Broome, 2011), certain factors influence coaches' behaviour during coaching conversations, which in turn affects client behaviour, again resulting in specific client outcomes (see Figure 1). Taking a look at coaches' influence on the coaching process and outcomes, most of all qualitative research methods have examined several coach attributes, including knowledge, experiences, personality, attitudes, skills, and behaviours (Lai & Mcdowall, 2014). From the clients' point of view, especially listening, understanding, and encouragement seem to be coach behaviours influencing clients' learning processes (de Haan, Culpin, & Curd, 2011). Interviews of experienced coaching purchasers revealed that, for instance, the ability to make in-depth conversations and a philosophy of personal responsibility are perceived as exceptional coach capabilities (Dagley, 2010). A systematic review highlighted the importance of coaches' professional psychological background, coach attitudes such as openness and enthusiasm, and communication skills such as powerful questioning (Lai & Mcdowall, 2014). According to the above mentioned findings, coach behaviour in terms of communication plays an important role for coaching processes. Given their purpose of supporting clients in moving towards their goals (Grant & O'Connor, 2010) and finding resolutions (Cox, 2013), the particular importance of coaching questions has been emphasised by a range of studies (Clarke & Dembkowski, 2006; Fillery-Travis & Cox, 2014; Wallis, 2016). As a result of their positive effects in therapeutic settings, coaching research recently concentrated on solution-focused questions (Cavanagh & Grant, 2010). We use an input-process-output model as a framework to investigate effects and antecedents of coaches' SFQ. Figure 1 gives an overview of the underlying approach and its application in our study and will be explained in detail in the following sections.

Figure 1: A model of input, process, and output factors in coaching and its application in our study.



Effects of Coach Behaviour on Client Behaviour

With the aim of satisfying the demand for a greater amount of coaching process research, coaching studies increasingly focus on coach behaviour and its effects on clients. Since coaching questions are a powerful instrument to involve the client in the process (Moen & Skaalvik, 2009), exponential growth of research examining the effects of coaches' SFQ has shown that they are associated with a number of positive coaching outcomes, such as well-being (Grant, 2016), positive affect (Grant & O'Connor, 2010, 2018), cognitive flexibility (Theeboom et al., 2016), self-confidence (Wehr, 2010), own functioning, and process satisfaction (Visser, 2011). Beyond these studies using questionnaire data, an examination of clients' behavioural responses could depict the actual interaction from an objective perspective neither coach nor client can take. de Shazer's slogan "Problem talk creates problems—solution talk creates solutions" (de Shazer, 1989) represents the central idea of our

consideration. Based on theories that interpersonal behaviour elicits behavioural responses of the conversational partner (Kiesler, 1996) and assumptions that SFQ are particularly helpful by leading the client to “self-found internal solutions” (Visser, 2011), we hypothesise:

Hypothesis 1a: Within the coaching conversation, coaches’ SFQ elicit clients’ solution statements.

Coaches’ SFQ were likewise found to increase clients’ action steps and self-efficacy (Grant & O’Connor, 2010, 2018; Neipp et al., 2016). In SFQ-research, clients’ self-efficacy is usually operationalised by questionnaires, albeit considering clients’ self-efficacy at a behavioural level would facilitate an uninfluenced measurement of direct effects within the coaching interaction. A single study conducted by Gessnitzer, Schulte, and Kauffeld (2016) considered clients’ self-efficacy as self-efficient statements and found that these statements can be triggered by coaches’ proposing solutions, providing support, and asking open questions in different sessions of the coaching process. Based on the idea that effective coaching questions should enhance clients’ self-efficacy (Grant & O’Connor, 2010) and empirical findings revealing that coaches’ SFQ indeed show these effects, we follow Gessnitzer et al.’s (2016) approach and hypothesise:

Hypothesis 1b: Within the coaching conversation, coaches’ SFQ elicit clients’ self-efficient statements.

Effects of Client Behaviour on Client Outcomes

Studies on coaches’ SFQ found positive effects on clients’ goal attainment (Grant, 2016; Grant & O’Connor, 2010, 2018; Visser, 2011). Since clients’ central purpose for coaching is achieving their individual objectives (Grant et al., 2010), goal attainment is one of the most important outcome variables in coaching research (Grant & O’Connor, 2018). Particularly the approach of goal attainment scaling using clients’ ratings of goal progression with regard to initially set goals is considered a comparable measure of coaching efficacy (Grant, 2013). Currently, coaching studies have investigated the link between coach attributes or coach behaviour and clients’ goal attainment, not whether goal attainment might be linked to client behaviour. Two studies taking a closer look at this last-mentioned path found that clients’ nonverbal dominant behaviour was linked to goal attainment (Ianiro et al., 2015) and clients’ self-efficient statements to be positively related to goal attainment (Gessnitzer et al., 2016). Based on these findings, we assume that both considered client behaviours are positively related to goal attainment and therefore hypothesise:

Clients’ solution statements (*Hypothesis 2a*) and clients’ self-efficient statements (*Hypothesis 2b*) during the coaching conversation are positively related to clients’ goal attainment.

Beyond goal attainment as a relative general coaching outcome, we want to examine effects of clients’ behaviour on further client outcomes with a higher proximity to the contents of the coaching programme, namely career issues. Given the assumption that coaches might serve as role models to clients (Grant et al., 2010; Jordan et al., 2017), we consider the career-related attributes we investigate hereafter also for coaches. We examine if clients’ solution statements and self-efficient statements during the conversation are related to clients’ career adaptability and goal orientation at the end of the process.

Career adaptability is a central psychosocial construct in vocational psychology and career research and denotes personal resources for managing current and anticipated career-related tasks and transitions (Savickas & Porfeli, 2012). It involves concern for prospective career tasks, control over personal career development, curiosity about career opportunities, and confidence to solve career-related problems (Savickas & Porfeli, 2012). Since clients’ solution statements during a career-coaching programme involve the mental analysis of different ideas with regard to the future career and hence cover an adaptation to different scenarios, we hypothesise:

Hypothesis 3a: Clients' solution statements during the coaching conversation are positively related to clients' career adaptability at the end of the process.

Given the relation of self-efficacy beliefs and adaptation (Bandura, 1997), it can further be assumed that self-efficient statements are related to a more adaptive attitude with regard to career-related tasks, opportunities, and problems. We therefore hypothesise:

Hypothesis 3b: Clients' self-efficient statements during the coaching conversation are positively related to clients' career adaptability at the end of the process.

Goal orientation as one of the most important variables in theories of motivation is defined as "disposition toward developing or demonstrating ability in achievement situations" (Vandewalle, 1997, p. 996). It is associated with learning and performance and has positive relationships with creative self-efficacy (Gong, Huang, & Farh, 2009), positive affect, satisfaction, and engagement (Gillet, Lafrenière, Vallerand, Huart, & Fouquereau, 2014). It was shown to facilitate training transfer (Blume, Ford, Baldwin, & Huang, 2010) and is hence likewise interesting for coaching. Beyond studies revealing goal orientation as an antecedent of coaching effectiveness, there is a demand for research considering goal orientation as coaching outcome (Bozer & Jones, 2018). Goal orientation was found to be positively related to self-regulatory processes (Bouffard, Boisvert, Vezeau, & Larouche, 1995) and settings that emphasise learning (Kozlowski et al., 2001). Since a career-coaching programme is such a setting and clients' solution and self-efficient statements comprise self-regulatory processes, we hypothesise:

Clients' solution statements (*Hypothesis 4a*) and clients' self-efficient statements (*Hypothesis 4b*) during the coaching conversation are positively related to clients' goal orientation at the end of the process.

Effects of Coach Attributes on Coach Behaviour

Although coaches' SFQ seem to be important for coaching success, research on coach attributes promoting this behaviour has been neglected so far. A study conducted by Ianiro and Kauffeld (2014) examined how coaches' mood influences their nonverbal behaviour during the conversation. Wallis' (2016) interviews of coaches' personal experiences showed their personal history, education, philosophy, and current state to be influential of the way they questioned clients. The research of Jordan et al. (2017) revealed the first hints that coaches' career-related attributes might be of importance for coaches' behaviour. They found that coaches' career adaptability and goal orientation affect clients' increase of career decision-making self-efficacy over the coaching process. A sound explanation of the results is missing, but findings gave rise to the idea that coaches' career-related attributes trigger certain coach behaviours, which in turn serve as role model to clients and influence their coaching outcomes. Based on this assumption and research showing that certain coach attributes influence coaches' way of asking questions (Wallis, 2016), we want to examine if coaches' career-related attributes of career adaptability and goal orientation manifest in coaches' SFQ.

As above, career adaptability is assumed an important personal and professional resource. A meta-analytic investigation revealed that career adaptability is associated with higher levels of future orientation, optimism, and proactive personality (Rudolph, Lavigne, & Zacher, 2017). Based on the apparently positive nature of career adaptability, it can be assumed that persons with higher levels of career adaptability have a stronger sense of positivity and constructiveness. Following theories stating that attitudes affect behaviour (e.g., Ajzen, 1985) and the stance that solution-focused techniques originate in a basic positive regard (Cavanagh & Grant, 2010), we expect such positive attitudes to manifest in coaches' way of questioning and therefore hypothesise:

Hypothesis 5a: Coaches' career adaptability is positively related to the frequency of their SFQ during coaching.

As described, goal orientation is an important motivational construct and associated with satisfaction and engagement (Gillet et al., 2014). Given that goal orientation affects motivation and the quest for continual improvement (DeShon & Gillespie, 2005), we argue that coaches with higher levels of goal orientation have a stronger need for progress and constructive methods in the coaching interaction. Since such a constructionist philosophy provides the basis for the solution-focused approach (Cavanagh & Grant, 2010) and could consequently manifest in coaches' constructive way of questioning, we hypothesise:

Hypothesis 5b: Coaches' goal orientation is positively related to the frequency of their SFQ during coaching.

Methods

Train-the-Coach Course and Coaching Process

Before the coaching processes started, all 'coaches-to-be' participated in a semester-long train-the-coach course offered as part of the teaching curriculum in the psychology master degree course. The train-the-coach course was led by experienced university employees and comprised approximately 200 hours of theoretical input, practical training, and self-reflection. Moreover, all coaches participated in peer coaching to gain practical experiences with a client within the training group. After participating in the train-the-coach course, coaches received a certificate and credit points.

For the following coaching processes, each coach was randomly assigned to a client that had voluntarily signed up to take part in the career-coaching programme. The career-coaching programme consisted of five individual coaching sessions of approximately two hours each over a period of approximately three months. The coaching comprised career-related issues, such as identification of individual strengths, reflection of an ideal career, and preparation for application procedures. In the first session, clients set career-related goals for their coaching process. The focus of the second session was a reflection of personal values, motives, and skills. The third session allowed clients to further reflect on personal strengths, career possibilities, or private and career aspirations. In the fourth session, clients had the possibility to simulate a job interview. Session five comprised planning of further steps and a reflection of the coaching process.

The effectiveness of the career-coaching programme has been shown in previous studies (e.g., Biberacher, Strack, & Braumandl, 2011). To ensure the quality of the coaching processes and provide the possibility to benefit from other coaches' experiences, coaches attended two group supervision sessions offered by coaching experts from science and practice.

Participants

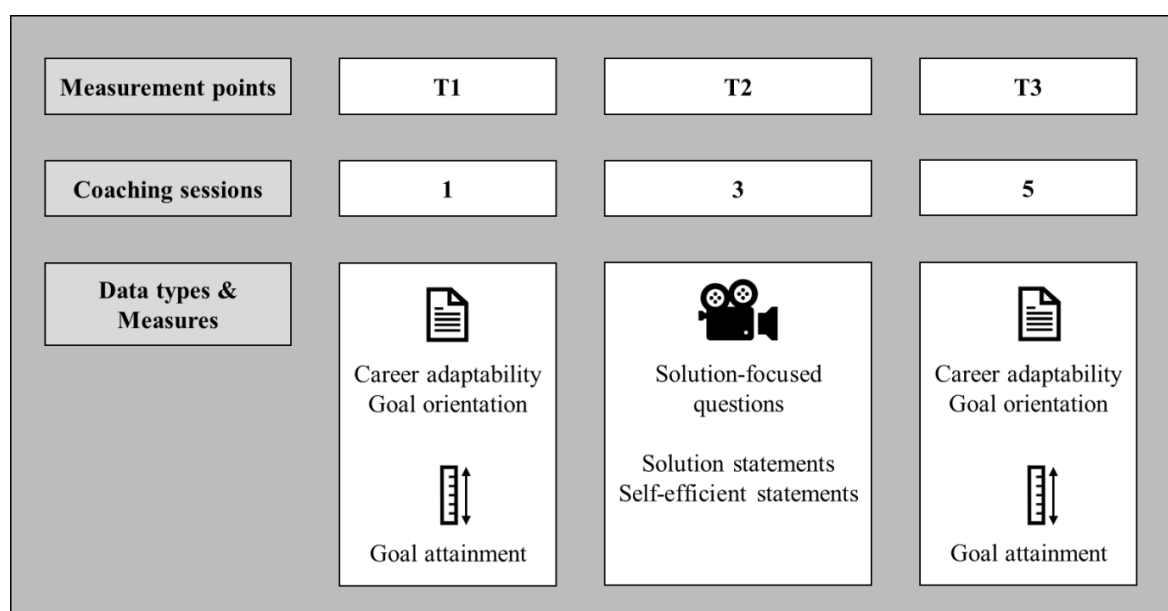
We examined 23 coaching dyads. All dyads were independent, meaning that each of the 23 coaches implemented exactly one coaching process with one of the 23 clients. Three of the coaches were research assistants; the other 20 coaches were students in their final year of a psychology master degree course at a German university. Coaches' mean age was 24.52 years ($SD = 1.31$) with a range of 22 to 27 years. Twenty-one of the coaches were female and two were male, which is typical for the gender distribution in psychological university courses. Three of the 23 clients were employed graduates; the other 20 clients were nearly graduated students of

different university courses. Clients' ages ranged from 21 to 36 years ($M = 25.57$ years, $SD = 3.84$). Seven of the clients were female and 16 clients were male.

Study Design and Measures

Data collection involved three measurement points and three different data types (see Figure 2). Coaches and clients answered *questionnaires* at the beginning (T1) and at the end (T3) of their coaching processes. Likewise, *goal attainment* scaling was inquired at T1 and T3. In the middle of the coaching process (T2), we collected *behavioural data* by recording videotapes of the coaching sessions. In the following, the measures will be explained in detail.

Figure 2: Study design, measurement points, data types, and measures.



Behavioural data

With the informed consent of coaches and clients, each coaching session was videotaped. We analysed videotapes of the third session to gather detailed observational data of coaches' and clients' verbal behaviour in the middle of the coaching process. The act4consulting2.0 coding system was used for an interaction analysis at the micro level. act4consulting2.0 is an economic advancement of the coding system act4consulting (Advanced Interaction Analysis for Consulting; Hoppe & Kauffeld, 2010) that has been used in several studies analysing coach-client-interaction (e.g., Gessnitzer & Kauffeld, 2015; Gessnitzer et al., 2016). Coaches' and clients' verbal behaviour is represented by 24 mutually exclusive and exhaustive codes, meaning that there is exactly one code for every single communicative statement during the conversation. We conducted a computer-assisted coding process, recording time-event data using the software INTERACT (Mangold, 2017). Using this software, the coders cut the digitalised videotapes of the 23 coaching sessions into units of meaning (utterances), defined as the smallest meaningful speech segment that another person can understand and classify (Bales, 1950). Afterwards, each of coaches' and clients' utterances was labelled with one of the 24 act4consulting2.0 codes. If, for example, the coach gave an information, this utterance was coded with 'information/coach', and if he asked a solution-focused question after, the respective utterance was coded with 'solution-focused question/coach'. Clients' following solution would be coded with 'solution/client' and so forth. This procedure resulted in a long sequence of coded utterances which depicted the coach-client-conversation.

In the current study, we then shed light on three behaviours: coaches' SFQ, clients' solution statements, and clients' self-efficient statements. *Solution-focused questions* encourage the client to examine a situation with regard to resources, solutions, and possibilities instead of problems and deficits. "How did you succeed in managing this in previous situations?" or "Which personal resources might help you?" are examples for such questions. *Solutions* are statements of the client that refer to a question, problem, or situation and reveal an approach, resources, competencies, or supportive persons. Examples for such statements are "Person XY could give me helpful information." or "A detailed timetable would enable me to make more realistic plans." In line with Gessnitzer et al. (2016), we operationalised *self-efficient statements* as those that expressed proactive intent to change as well as action planning. *Proactive intent to change* denotes clients' positive statements with regard to change, commitment, initiative, and taking responsibility. Examples for such statements are "I will try this." and "It is my responsibility to figure out future career plans." *Action planning* indicates clients' statements of concrete actions and steps beyond the coaching session. They are distinguished from solutions by their character of very specific planning ("I will call him tomorrow.") and putting ideas into action ("I will draft this timetable next week with a special software.").

Figure 3: Exemplary coach-client conversation, assigned act4consulting2.0 codes, and examples of first- and second-order transitions.

Conversation	Act4consulting2.0 codes	
Client: I really can't decide whether to stay at university and do a doctorate or to work for a big company.	Problem	
Coach: What might help you to make this decision?	Solution-focused question	
Client: Mh, I'm not sure... I think I need more information about both fields of work. This would facilitate having a clearer picture of what better fits my strengths.	Feedback	Second-order transition (lag 2)
	Solution	
Coach: So how could you succeed in getting this information?	Solution-focused question	
Client: For more information about a doctorate, I could speak to somebody who is working at the university. Oh, I will directly ask my friend Charly for the phone number of his cousin who is doing a PhD!	Solution	First-order transition (lag 1)
	Self-efficient statement (in terms of Action planning)	

The process was performed by five coders who received a profound training of 50 hours with act4consulting2.0 and INTERACT (Mangold, 2017) before coding the sample of 23 coaching sessions. The interrater reliability of the codings was assured by multiple coding of three randomly selected video files. In doing so, more than 10% of the video material was multiply coded. Coders' agreement of $\kappa = .65$ (Fleiss, 1971) represents a good inter-rater-reliability (Landis & Koch, 1977).

The analysed video material comprised a total of 43 hours and more than 30,000 codes. On average, a coaching session took between 65 and 146 minutes ($M = 112$ minutes, $SD = 15.87$) and contained 1,322 codes ($SD = 271$). The frequency of coaches' SFQ as well as clients' solutions and clients' self-efficient statements per session was counted. To allow for a comparison of coaching sessions of different durations, the frequencies of the respective codes were divided by the duration of the coaching session and multiplied by 60 to obtain an adjusted score per hour.

To test Hypotheses 1a and 1b, we used lag sequential analysis. This method explores temporal patterns in sequentially recorded data and investigates whether a certain behaviour is followed by another behaviour above chance (Bakeman & Quera, 2011). Sequential analysis proceeds as follows: first, transition frequencies for each statement pair are counted (i.e., frequency of clients' solution statement after coaches' SFQ). Afterwards, transition probabilities are computed (i.e., the conditional probability that the sequence *coaches' SFQ-clients' solution* appears when the coach asks a SFQ). Finally, z scores that are based on the difference between observed and expected frequencies are interpreted. At an alpha-level of 5% (1%), z scores larger than 1.96 (2.58) or smaller than -1.96 (-2.58) imply that a behavioural sequence (i.e., *coaches' SFQ-clients' solution*) occurs above chance. Furthermore, different so-called lags can be considered. If, for example, a SFQ of the coach is directly followed by a solution of the client, this is called a first-order transition (lag 1). A second-order transition occurs when a statement is followed by another statement before the solution is expressed (lag 2). Figure 3 shows an exemplary extract from a coach-client conversation, the assigned act4consulting2.0 codes, and examples of first- and second-order transitions.

Career adaptability

Coaches' and clients' career adaptability was measured using a German translation (Spurk & Volmer, 2013) of the Career Adaptability scale from the Career Futures Inventory (Rottinghaus, Day, & Borgen, 2005). The 11-item scale was answered on a 6-point scale ranging from 1 (*not at all*) to 6 (*completely*) and consisted of items such as "I can adapt to change in my career plans." For coaches, data from T1 were used. For clients, T3 data were used, controlling for their baseline at T1. Cronbach's alpha coefficients were acceptable (T1: $\alpha = .75$ for coaches, $\alpha = .78$ for clients; T3: $\alpha = .74$ for clients).

Goal orientation

As a measure of coaches' and clients' goal orientation, a German version (Ruisinger, 2003) of an instrument developed by Vandewalle (1997) was deployed. The 13-item scale consisted of items such as "I am willing to select a challenging work assignment that I can learn a lot from." All items were answered on a 6-point scale ranging from 1 (not at all) to 6 (completely). As with career adaptability data, we used coaches' data from T1 and clients' data from T3, controlling for their baseline at T1. Cronbach's alpha coefficients were mostly acceptable (T1: $\alpha = .63$ for coaches, $\alpha = .76$ for clients; T3: $\alpha = .79$ for clients).

Goal attainment

We used goal attainment scaling to investigate the degree of clients' coaching success. In doing so, we chose an approach in line with Gessnitzer et al. (2016): In the first coaching session, clients set up to three goals for the coaching process, noted their current position on a scale from 1 (*goal not at all achieved*) to 10 (*goal perfectly achieved*), and stated their desired degree of goal attainment. For example, a client would define a coaching goal such as "I want to reflect what's important for my career.", define the current position as a '5', and state the desired degree of goal attainment as 4 points (i.e., a target goal attainment of a '9'). Clients then evaluated their goal attainment in every coaching session. As a measure for the degree of goal attainment (DGA), we calculated
$$DGA = \frac{\text{final degree of goal attainment at T3}}{\text{desired degree of goal attainment at T1}}$$
 If in the above example, the client rated the final DGA as 3 points (e.g., a final goal attainment of an '8' in the last session), this would result in a DGA of $3/4 = 0.75$. Such a DGA below 1 indicates that from the clients' point of view, the goal is not fully

achieved, whereas a DGA of 1 means the goal is reached. DGA values of above 1 signify that regarding their goal, clients achieved even more than initially expected. Average DGA was 0.83 ($SD = 0.35$) and ranged from 0.19 to 2.00. If clients set more than one goal, the mean of the DGAs of the single goals was calculated. There was no significant correlation between DGA and number of goals set.

Results

Means, standard deviations, and correlations of measures used in this study are displayed in Table 1.

Table 1: Means, Standard Deviations, and Correlations of Measures used in this Study

Variable/Scale	M	SD	1	2	3	4	5	6	7	8	9	10	11
<i>Coaches</i>													
1. Age	24.52	1.31											
2. Gender	-	-	.12										
3. Career adaptability T1	4.78	.39	-.06	-.12									
4. Goal orientation T1	4.18	.42	.18	-.05	.21								
5. SFQ T2	11.74	7.86	-.20	-.30	.53**	.15							
<i>Clients</i>													
6. Age	25.57	3.84	-.06	-.09	.36	.10	.16						
7. Gender	-	-	-.17	.20	.30	-.02	.00	-.08					
8. Solution statements T2	11.25	6.93	.32	-.33	.03	.20	.09	.26	-.20				
9. Self-efficient statements T2	8.78	5.17	.17	-.09	-.16	.42*	-.16	-.06	.01	.43*			
10. Goal attainment T3	.83	.35	.02	-.01	-.25	.00	-.49*	.02	-.04	.52*	.38		
11. Career adaptability T3	4.80	.47	.01	.13	-.08	.10	-.45*	.31	.26	.08	.25	.31	
12. Goal orientation T3	4.42	.59	-.29	-.04	.03	.10	-.05	.44*	.26	-.02	.25	-.03	.69**

Note. T1 = beginning of the coaching process, T2 = middle of the coaching process, T3 = end of the coaching process; SFQ = Solution-focused questions;

Coding: female = 0, male = 1;

* $p < .05$; ** $p < .01$.

Effects of Coaches' SFQ on Client Behaviour

We conducted lag sequential analysis with the software INTERACT (Mangold, 2017) to investigate whether coaches' SFQ elicit clients' solution statements and self-efficient statements. The sequences of coaches' SFQ followed by clients' solution statements were significant. This was the case both for lag 1 ($z = 10.54$, $p < .01$) and lag 2 ($z = 9.09$, $p < .01$). Also, the sequences of coaches' SFQ followed by clients' self-efficient statements were significant for lag 1 ($z = 2.02$, $p < .05$) and lag 2 ($z = 3.24$, $p < .01$). These results suggest that coaches' SFQ can elicit clients' solution statements and self-efficient statements as directly following or next statements but one and hence support Hypotheses 1a and 1b.

Effects of Client Behaviour on Coaching Outcomes

Using SPSS (Version 25.0), several multiple linear regressions were computed to investigate if the examined client behaviours affected different coaching outcomes.

The first regression revealed that clients' solution statements significantly predicted goal attainment ($\beta = .44$, $p < .05$), whereas clients' self-efficient statements were not significant predictors of goal attainment ($\beta = .20$, ns). The model explains 30% of the variance ($R^2 = .30$, $F(2, 20) = 4.29$, $p < .05$). Hence, Hypothesis 2a could be supported, whereas Hypothesis 2b could not be supported.

Results of the second regression showed that, controlling for baseline at T1, clients' solution statements were not significant predictors of clients' career adaptability at the end of the coaching process ($\beta = -.27$, ns), whereas clients' self-efficient statements significantly predicted clients' career adaptability at the end of the coaching process ($\beta = .34$, $p < .05$). The model explains 63% of the variance ($R^2 = .63$, $F(3, 19) = 10.91$, $p < .01$). Thus, Hypothesis 3a could not be supported, whereas Hypothesis 3b could be supported.

The third regression indicated that, controlling for baseline at T1, clients' solution statements were not significant predictors of clients' goal orientation at the end of the coaching process ($\beta = -.13$, ns), whereas clients' self-efficient statements significantly predicted clients' goal orientation at the end of the coaching process ($\beta = .39$, $p < .05$). The model explains 54% of the variance ($R^2 = .54$, $F(3, 19) = 7.34$, $p < .01$). Thus, Hypothesis 4a could not be supported, whereas Hypothesis 4b could be supported.

Effects of Coaches' Career-Related Attributes on Coaches' SFQ

A multiple linear regression was computed to examine if coaches' career adaptability and goal orientation were positively related to the frequency of their SFQ during coaching. It was found that coaches' career adaptability significantly predicted coaches' frequency of SFQ ($\beta = .52$, $p < .05$), whereas coaches' goal orientation was not a significant predictor of coaches' frequency of SFQ ($\beta = .04$, ns). The model explains 29% of the variance ($R^2 = .29$, $F(2, 20) = 4.01$, $p < .05$), which indicates that coaches' career adaptability and goal orientation account for approximately one-third of the variance in the frequency of coaches' SFQ. Hence, Hypothesis 5a could be supported, whereas Hypothesis 5b could not be supported.

Discussion

The aim of our study was an investigation of the coaching process at a micro level with the focus on effects and antecedents of coaches' SFQ. First, the investigation of effects of coaches' SFQ on client behaviour indicated that coaches' SFQ elicit clients' solution statements and self-efficient statements. This is in line with ideas supposing solution talk to create solutions (de Shazer, 1989) and findings that coaches' SFQ increase clients' self-efficacy (Grant & O'Connor, 2010, 2018; Neipp et al., 2016).

Second, results regarding the effects of client behaviour on coaching outcomes revealed an interesting pattern indicating different qualities of the considered client statements. While clients' solution statements significantly predicted clients' goal attainment, they were apparently not sufficient to affect clients' career adaptability and goal orientation. The pure statement of solutions does not yet compulsorily involve a personal intent to change or actual implementation of these solutions. This might explain why solution statements affect clients' perceived goal attainment, but have no impact on clients' career adaptability and goal orientation, which are two basic affective attitudes whose variability is not comparable to a rather responsive to change measure such as goal attainment (Gordon, Powell, & Rockwood, 1999). In contrast, clients' self-efficient statements go beyond the pure statement of solutions and additionally involve a willingness to change and ideas for the implementation of solutions, entailing a self-efficacy to succeed that influenced career adaptability and goal orientation. The result of clients' self-efficient statements not affecting goal attainment is contrary to findings of Gessnitzer et al. (2016) but might be explained by their finding that the connection between self-efficient statements and goal attainment is higher for later sessions in the coaching process. Since we investigated clients' self-efficient statements in the middle of the process, it is conceivable that they were not vigorous enough to affect goal attainment at the end of the process.

Third, we examined effects of coaches' career-related attributes on their SFQ and found that career adaptability, but not goal orientation, predicted coaches' frequency of SFQ. The findings with regard to career adaptability are according to our expectations and can be interpreted in line with evidence of career adaptability to be associated with attributes of a positive mindset (Rudolph et al., 2017). Findings on goal orientation are surprising but might be on the one hand explained by the questionable reliability of the scale for coaches' data. Alternatively, it is conceivable that coaches with higher levels of goal orientation indeed have a quest for continual improvement, which albeit manifests in other behaviours than SFQ, such as proposing solutions to the client or taking a rather consulting role.

Contributions and Implications

Researching the coaching interaction as a confidential and interpersonal process is methodologically challenging, making it necessary to use methodologies such as videotaped coaching interaction and conversation analysis (Fillery-Travis & Cox, 2014). Despite these challenges, our study succeeded in investigating micro-level relations between coach attributes, coach behaviour, client behaviour, and coaching outcomes by a mixed methods design focusing on behavioural data and longitudinal self-report. Our analysis of videotaped coaching sessions allowed for the observation of direct, uninfluenced reactions of clients and thus offers a neutral perspective that exceeds conscious perceptions of coach and client (Schermuly & Scholl, 2012). We thereby improve evidence with regard to effects and antecedents of coaches' SFQ. The findings concerning the impact of coaches' career adaptability on subsequent coach behaviour and effects of SFQ on client behaviour are particularly interesting for coaching practitioners, since their knowledge about the importance of a positive mindset and conscious use of SFQ can crucially improve the quality of coaching interventions.

Moreover, our findings might enhance the quality of train-the-coach courses, as they can sensitise for the impact of personal attitudes, place special focus on SFQ, teach its particular relevance, and practice the use of SFQ more intensely. The findings that client behaviour during the coaching process is an indication for later coaching success and that different qualities of client behaviours are essential to reach a wide range of coaching outcomes give an important insight into processes generating coaching outcomes and hence outline a clue for future coaching research. Our study yields practical implications also beyond the actual coaching situation. If clients experience coaches' SFQ and respond to it by solutions and self-efficient statements, some kind of role modelling behaviour in terms of adopting a positive mindset might take place, which clients potentially also use beyond the current coaching issues. Such effects can be of particular importance with regard to the desired, but often questionable, sustainability of coaching interventions.

Limitations and Future Research

Some limitations should be kept in mind when interpreting the findings of our study. First, due to sample size it was not possible to test our model as a path or structural equation model. The test of our hypotheses by lag sequential analysis and multiple linear regressions yielded reliable results. However, an overall methodological consideration of the model would also allow for a test of mediation hypotheses and could thus increase the understanding of relations between the involved variables at a micro level. We might simply state that future research should use larger sample sizes to consolidate our findings, but investigating behavioural data makes that challenging since the coding process of audio- or videotaped coaching sessions is very complex and time consuming. Therefore, future studies examining coach and client behaviour might consider using technologies that make coding processes more economic. An example for such a technology is the automated speaker diarisation approach (e.g., Huijbregts, 2008) which automatically segments audio or video inputs according to speaker identity and thus facilitates the analysis of behavioural data. Second, both coaches and clients in our study were university students, which implies a

slightly limited generalisability of our findings since university students might not be representative of other demographic groups such as employees or executives.

Although several studies revealed that there is no difference between novice and professional coaches with regard to coaching success (Graßmann et al., 2019; Sonesh et al., 2015) and coaching effectiveness does not differ between student clients and other groups of clients (Graßmann et al., 2019), future research should investigate effects and antecedents of coaches' SFQ for professional coaches and clients in the business context to strengthen evidence with regard to SFQ. Third, based on previous research and assumptions of coaches as possible role models to clients (Grant et al., 2010; Jordan et al., 2017), we examined the very specific career-related attributes of career adaptability and goal orientation both for coaches and clients. Although this makes a start for learning more about relevant coach attributes and interesting coaching outcomes, future research should investigate further career-related attributes to broaden knowledge about (coach) input and (client) output factors in coaching. Furthermore, an investigation of coach behaviours beyond SFQ is desirable to establish a comprehensive evidence base about effects of different coach behaviours and their differential effects on clients' (behavioural) outcomes.

Conclusion

This study investigated the impact of coaches' SFQ on client behaviours, effects of these behaviours on different coaching outcomes, and the manifestation of coaches' career-related attributes in coaches' SFQ. Our findings underline the importance of SFQ for the quality and success of coaching interventions and should sensitise coach practitioners and professionals working in the (business) coaching context for the possibilities this questioning technique offers. A special contribution arises from the use of behavioural data, which allows for an improved, unbiased understanding of coaching processes at a micro level. For future research, the use of larger sample sizes, a consideration of different coach and client populations, and an investigation of additional career-related attributes and coach behaviours are recommended.

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