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Using the Genetic Counseling Skills Checklist to Characterize Prenatal Genetic Counseling

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Using the Genetic Counseling Skills Checklist to Characterize Prenatal Genetic Counseling

by

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A thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Science
with a concentration in genetic counseling
College of Public Health
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ABSTRACT

Genetic Counseling relies on communication skills to help patients understand and adapt to a genetic disease or risk. However, little is known about which skills are most commonly used or the extent to which genetic counseling sessions vary. A novel process measure titled the "Genetic Counseling Skills Checklist" (GCSC) was developed in a prior pilot study and includes 8 broad categories each consisting of 5-8 skills. This study is the first to apply the final GCSC to characterize 20 mock prenatal sessions conducted by 5 genetic counselors (GCs) for 2 prenatal indications using 3 trained actors as patients. Two experienced GCSC coders independently used the GCSC to document specific communication skills that were used during the recorded sessions and assigned each session an overall subjective rating on a scale from 1 (low quality) to 10 (high quality). Following each session, the 2 coders compared their completed checklists, calculated inter-rater reliability for each skills category, and discussed any areas of disagreement. Together, the coders created a consensus checklist for each session that served as the final agreed upon checklist. Consensus checklists were analyzed using descriptive statistics to unearth trends in skill usage. We found moderate to high inter-rater reliability (Kappa statistics ranging from 0.77 to 0.88) among the 8 categories and a significant positive correlation between average GC quality ratings and overall number of skills used ($r=0.88$). Our findings indicate that genetic counselors may be assessed more positively by observers if they employ a broader spectrum of communication skills. This study demonstrated that the GCSC can be a valuable and reliable tool to discover and analyze current trends in genetic counseling practice.

CHAPTER 1: INTRODUCTION

Genetic Counseling involves helping patients understand the genetic contributions of disease through a variety of educational, psychosocial, and clinical skills. These components of genetic counseling are delivered from provider to patient through a relationship that is built upon professional, empathic communication. Past research has identified broad communication patterns and variation in genetic counselor styles, but there exists an opportunity to highlight and analyze the myriad of specific communication skills genetic counselors use (Ellington et al., 2006; Roter et al. 2006). A prior study analyzed risk communication in genetic counseling and found that presenting key risks as proportions/percentages and using plain language to express risk information were among skills used the most, while comparing personal risk to general population risks was among the skills used the least (Fransen & Meertens, 2006). However, the scope of the study was limited to skills related to risk communication, and the focus was largely on inter-rater reliability of a risk communication checklist rather than analysis of genetic counseling trends (Fransen & Meertens, 2006). Further, while specific skills such as teach-back and encouraging hope have been associated with improved patient reported feelings of empowerment, these studies were focused on how these skills affected patient satisfaction rather than how often GCs were using them (Tamura-Lis, 2013; Yuen et al., 2020).

Few studies have focused on prenatal counseling skills, though some researchers have argued that genetic counselors need to deviate from previous models of non-directive counseling and employ a broad range of communication skills to support persons that are pregnant and/or

going through the family planning process (Warton et al., 2023). Major themes of communication have been identified in a previous study that interviewed 8 prenatal genetic counselors and their patients (Williams et al., 2016). Some of the themes Williams et al. 2016 described include education/information-giving, commitment to the patient's needs, acting as the patient's advocate, and offering psychosocial support. The most extensive study into prenatal genetic counseling communication was performed by Roter et al. (2006); where the Roter Interaction Analysis System was used to code the medical dialogue in 96 prenatal and 81 cancer sessions with simulated patients. Roter and colleagues (2006) reported that two main communication patterns emerged from their analysis, teaching and counseling, with prenatal counselors favoring teaching-dominant styles in 58% of sessions. However, while that study's contributions to understanding broad communication patterns and potential variation among counselors were immense, there is still an opportunity to further quantify specific communication skills used by prenatal genetic counselors (Roter et al., 2006). In sum, currently little is known about the broad range of skills GCs use, which of these skills are most or least commonly used, and the extent to which skills used in sessions may vary, particularly within prenatal genetic counseling.

The genetic counseling skills checklist (GCSC) is the first process measure designed to encompass nearly all skills that genetic counselors reported using in a prior study (Zale et al. 2022; Hehmeyer et al., 2020). The checklist derived structural inspiration from a variety of previously validated clinical communication scales and checklists, while also drawing guidance from theoretical clinical frameworks such as the Reciprocal Engagement Model (REM) and the Framework for Outcomes in Clinical communication Services (FOCUS) (Cragun & Zierhut, 2018; Hartmann et al., 2015; Veach et al., 2007). The GCSC has 56 individual skills sorted into 8

broader categories and is intended to be a tool that allows for easy annotation of skills in real time. Table 1 in the Appendix outlines the 8 categories and the 56 individual skills that comprise the GCSC in full. A brief summary of the checklist and some examples of individual skills are outlined below.

Building Rapport is the first GCSC category and contains a total of eight individual items. Skills such as greeting the patient, starting off positive and employing active listening fall into this category. Mutual Agenda Setting and Session Structuring is the second category and contains six skills. Eliciting patient agenda/goals and encouraging the patient to ask questions are a few examples of skills that fall into this category. The third category is Risk Communication, which includes six skills. Examples of Risk Communication skills include presenting key risks as percentages/frequencies and avoiding numeracy overload. Recognizing and Responding to Emotions and Prior Experiences is the fourth GCSC category and contains 8 skills. Inviting the patient to share experiences and inquiring about emotions not clearly expressed are a few examples of skills within this category. Educating is the fifth category, containing seven skills. Examples of Education skills include: eliciting patient's prior and/or desired knowledge and tailoring information to patient's needs. Checking for Understanding is the sixth category, and it contains five skills. Use of teach-back and explicitly asking what questions the patient has are examples of skills within this category. The seventh category is Facilitating Decision Making, which contains eight skills. Examples of skills within this category include exploring potential outcomes of options and supporting patient autonomy. The eighth and final GCSC category is Promoting Patient Activation, which contains eight skills. Encouraging hope and providing support resources are examples of skills within this category.

The GCSC unpublished pilot study described the development of the tool and applied the tool in a limited number of sessions (Hehmeyer et al., 2020). Thus, the goals of our study were twofold: to gather additional GCSC inter-rater reliability evidence, and to provide specific insights into potential communication trends in prenatal genetic counseling.

CHAPTER 2: METHODS

Training and Coding of Simulated Sessions

This study was determined by the University of South Florida's Institutional Review Board to be an evaluation study and did not fall under the purview of human subjects research. The simulated sessions used in this work were recorded as part of a study approved by the University of Minnesota and all genetic counselors and actors provided consent for the recorded sessions to be used in future research.

The recorded sessions were completed by a total of 5 genetic counselors who volunteered to complete two cases.. Each case had a pre-test consult and a post-test consult; as such, each of the 5 counselors had a total of 4 recorded videos available for coding. The two cases were a pre/post NIPT consult for Down Syndrome, and a pre/post positive carrier screen for a gay couple who were seeking to start a family with a surrogate mother. The actors for these two cases were the same for each of the 5 genetic counselors.

The two coders were David Cline (DC) who is a genetic counseling student with prior training on use of many of the GCSC skills, and Asim Imtiaz (AI), a USF College of Public Health MPH student with no prior exposure to or experience with genetic counseling. Both coders were trained by the GCSC team over the course of a two-month period, which involved getting an overview of the checklist itself, guidelines and examples of specific skill detection, and finally coding 3 designated training sessions and discussion of any inconsistencies across coders.

Once training was complete, DC and AI began to independently code the 20 prenatal genetic counseling videos in February of 2022 over a period of 5 months. The independent coding process entailed the following: watching the session to completion, marking off any communication skills used, providing a timestamp for skills used, and giving an overall quality rating of the session ranging from 1 to 10. Approximately 45 to 90 minutes were spent independently coding each video by the coders.

When both DC and AI finished independently coding a video, they shared their checklists with each other and discussed their findings. Any disagreements on specific checklist items were recorded, along with a brief description of the disagreement, and how the disagreement was resolved. Once any and all disagreements for a video were resolved, a consensus checklist was created, documenting the communication skills that both coders observed for that particular session. The consensus quality rating of the session was calculated by taking the average of the two ratings each coder had given and was included on the consensus checklist. As such, a total of 20 consensus checklists were created for use in data analysis.

Inter-Rater Reliability

Inter-rater reliability was calculated across all videos for each of the eight skills categories using the total number of agreements and disagreements on individual skills between the two coders to calculate Cohen's kappa. The kappa statistic is a measure of inter-rater agreement that adjusts for chance agreement from guessing and yields a value that can range from -1 to +1 (McHugh, 2012). The patient activation category had the highest kappa statistic for any category at 0.88, while risk communication had the lowest at 0.77. This range of 0.77-0.88 signifies moderate to strong agreement according to published guidelines (McHugh, 2012).

Table 2 includes the kappa statistic for each of the eight GCSC categories along with the average kappa statistic across all categories, which was 0.82.

Table 2. Inter-Rater Reliability Data

<i>Category</i>	<i>Cohen's Kappa</i>
Building Rapport	0.84
Mutual Agenda Setting and Structuring	0.8
Risk Communication	0.77
Recognizing and Responding to Emotions and Prior Experiences	0.81
Educating	0.86
Checking for Understanding	0.80
Facilitating Decision Making	0.82
Patient Activation	0.88
All Categories	0.82

Note. Table 2 depicts the average Kappa statistics for each of the eight categories across all 20 sessions. These eight values were averaged to obtain the kappa statistic for all categories.

GCSC Analysis

Descriptive analyses were conducted for the 8 categories as well as the individual skills. Because each category contains a different number of skills, a percentage of total skills used for each category was calculated as a way for categories to be more easily compared to each other. Percentages of skills used for each category were calculated by dividing the average sum of skills checked in that category across all sessions by the total number of skills in that category. For example, the coders checked an average of 4.9 skills being used in the Building Rapport category out of a total of 8 skills in that category. This corresponds to a percentage of 61%.

To determine which skills were used most and least often, individual skill usage was calculated for all 56 skills by adding the number of sessions in which the skill was used. Given there were 20 sessions, the maximum possible usage was 20. Finally, the subjective consensus quality ratings were correlated with the total number of skills used for each session using a

Pearson correlation. We hypothesized that counselors with higher usage of GCSC skills would receive higher subjective quality ratings from the coders.

CHAPTER 3: RESULTS

Out of the 8 GCSC categories, Facilitating Decision Making had the highest average number of skills used across all sessions at 68% while the Educating category had the lowest at 54%. Table 3 includes the average number of skills observed, total possible number of skills, and the usage percentage for each of the GCSC categories.

Table 3. Percent of Skills Used Within Each Category Across All Sessions

Category	Average Skills/Session	Total Possible Skills/Session	Percent of Skills Used
Building Rapport	4.9	8	61.3%
Mutual Agenda Setting and Structuring	3.9	6	65.8%
Risk Communication	3.5	6	59.2%
Recognizing and Responding to Emotions and Prior Experiences	5.1	8	63.6%
Educating	3.8	7	54.3%
Checking for Understanding	2.8	5	56.0%
Facilitating Decision Making	5.5	8	68.1%
Patient Activation	4.5	8	56.9%

Note. Skill usage data by category depicts which skill categories were used the most and the least across all sessions by percentage.

In the building rapport category, four of the eight skills were used in over 50% of the sessions (Figure 1). Greeting the patient was used in 19 sessions (95%), which was tied for the highest observed skill usage across all categories. Showing respect and active listening were both used in 17 sessions (85%). The skill used the least in this category was attending to the

environment, which had specific criteria to justify checking it off. This skill was used in five sessions (25%).

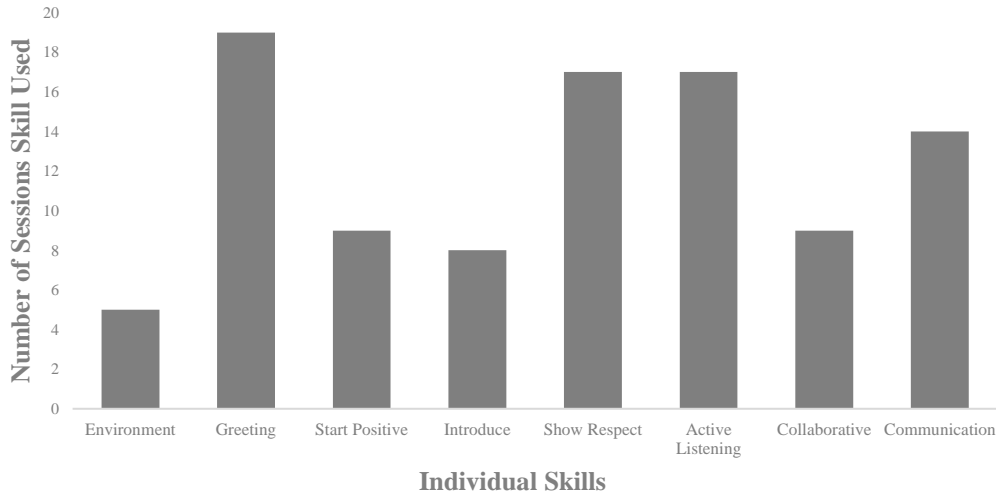


Figure 1

Building Rapport

Note. Figure 1 depicts the individual skill usage across all 20 sessions for each of the eight skills within the Building Rapport category. A brief abbreviation of each skill is provided above, while a full description of each skill can be found in Table 1.

Four of the six skills were used in over 50% of sessions for Mutual Agenda Setting and Structuring (Figure 2). Establishing mutual understanding of reason for the visit was used in 18 sessions (90%), while assessing and addressing patient needs throughout the session was used in 17 sessions (85%). The skill used the least in this category was encouraging the patient to ask questions during the session, which was used in six sessions (30%).

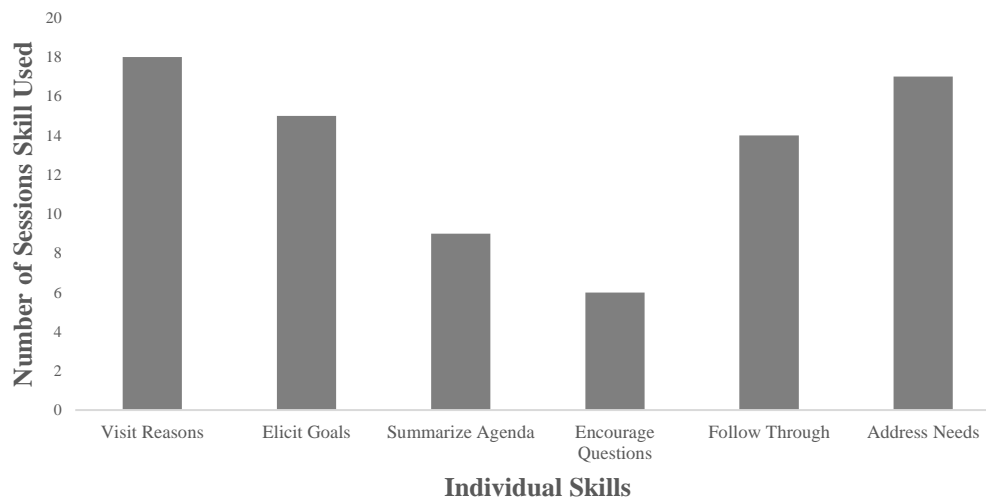


Figure 2

Mutual Agenda Setting and Structuring

Note. Figure 2 depicts the individual skill usage across all 20 sessions for each of the six skills within the Mutual Agenda Setting and Structuring category. A brief abbreviation of each skill is provided above, while a full description of each skill can be found in Table 1.

In the Risk Communication category, three of the six skills were used in over 50% of the sessions (Figure 3). Presenting the key risks as percentages/frequencies was another skill tied for the highest usage, observed in 19 sessions (95%), while avoiding numeracy overload was used in 16 sessions (80%). The skill used least in this category was visual risk presentation, which was used in four sessions (20%).

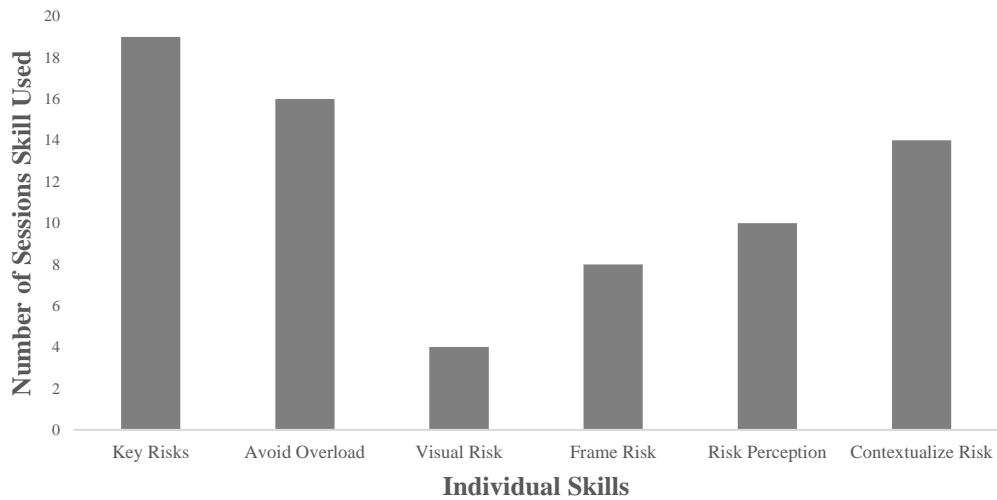


Figure 3

Risk Communication

Note. Figure 3 depicts the individual skill usage across all 20 sessions for each of the six skills within the Risk Communication category. A brief abbreviation of each skill is provided above, while a full description of each skill can be found in Table 1.

The skill usage for the Recognizing and Responding to Emotions and Prior Experiences category was the most evenly distributed (Figure 4). Six of the eight skills were used in over 50% of sessions, and none of the skills had a lower usage than 40%. Inviting the patient to share experiences and maintaining an affect that is suitable for the situation were the highest used skills, observed in 18 sessions each (90%). Recognizing and acknowledging a patient’s emotions was used the least, in eight sessions (40%).

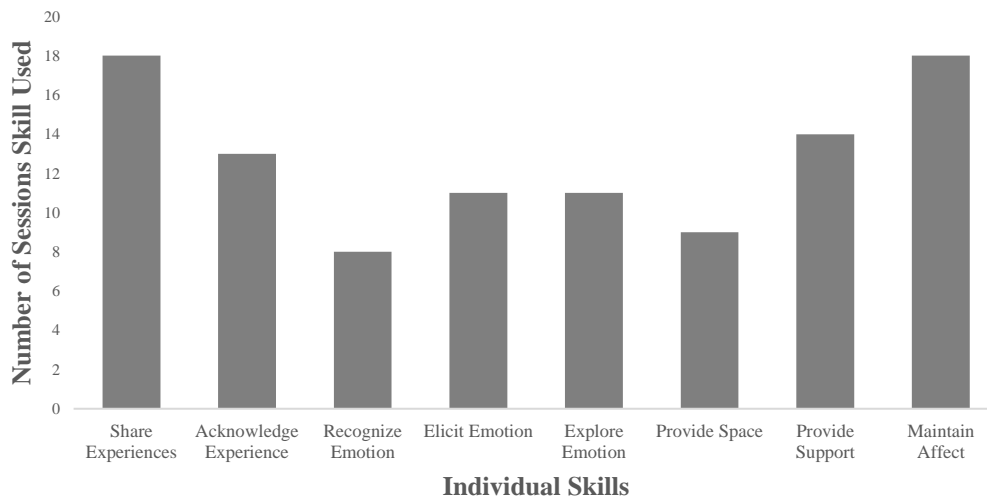


Figure 4

Recognizing and Responding to Emotions and Prior Experiences

Note. Figure 4 depicts the individual skill usage across all 20 sessions for each of the eight skills within the Recognizing and Responding to Emotions and Prior Experiences category. A brief abbreviation of each skill is provided above, while a full description of each skill can be found in Table 1.

While the Educating category had the lowest usage of skills as a whole, four of the seven skills were still used in over 50% of sessions (Figure 5). However, the other 3 skills were all used in less than 40% of sessions. Eliciting the patient’s prior knowledge and tailoring information to the patient’s needs were each used in 18 sessions (90%) the most for this category, while use of visuals and provision of written materials were used the least, in three sessions (15%) and four sessions (20%), respectively.

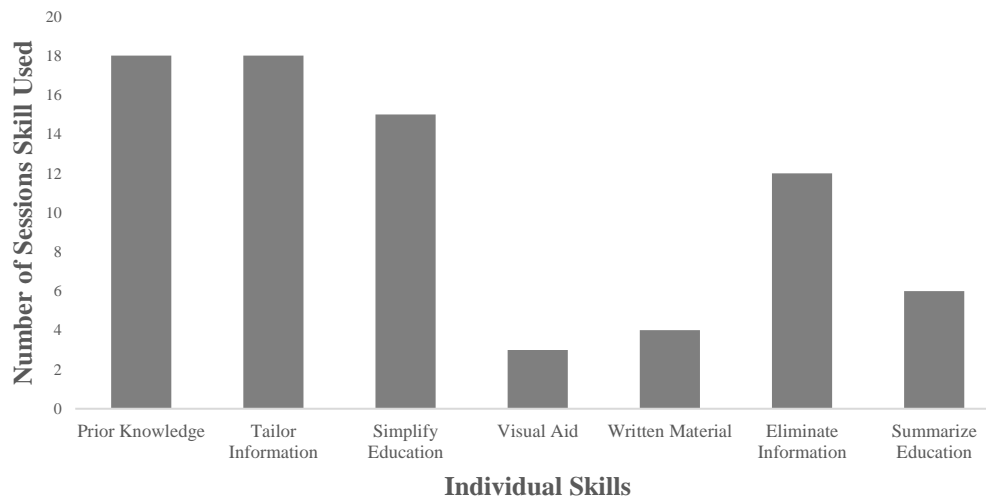


Figure 5

Educating

Note. Figure 5 depicts the individual skill usage across all 20 sessions for each of the seven skills within the Educating category. A brief abbreviation of each skill is provided above, while a full description of each skill can be found in Table 1.

Three of the five skills in the Checking for Understanding category were used in more than 50% of the sessions (Figure 6). Inviting/eliciting patient input of information was the skill used the most, in 18 sessions (90%), while eliciting patient perspective of how information could impact the patient’s life was used in 16 sessions (80%). Teach-back was used the least, in just two sessions (10%), making it the 2nd least used skill across all categories.

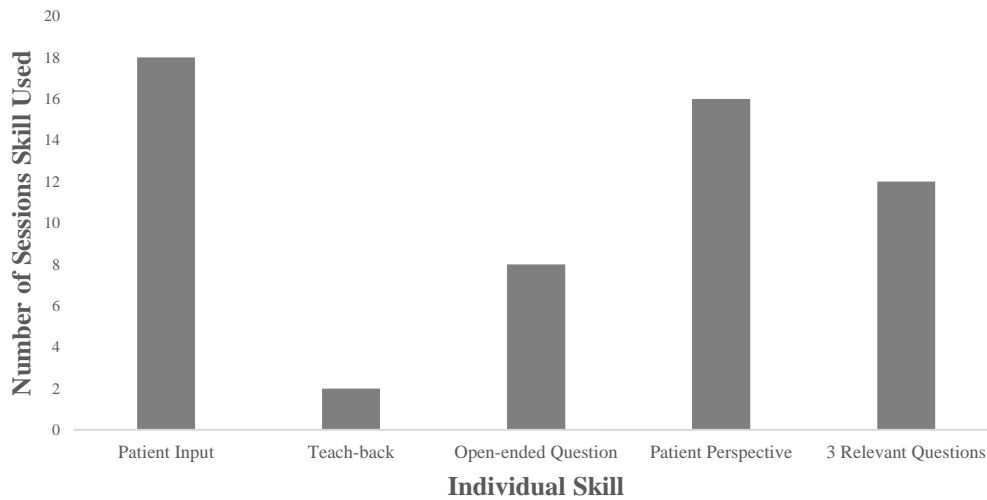


Figure 6

Checking for Understanding

Note. Figure 6 depicts the individual skill usage across all 20 sessions for each of the five skills within the Checking for Understanding category. A brief abbreviation of each skill is provided above, while a full description of each skill can be found in Table 1.

Facilitating Decision Making was the category with the highest usage percentage, with seven of the eight skills being used in at least 13 sessions (Figure 7). Listing the medically appropriate options and exploring potential outcomes were tied for highest usage across all categories, used in 19 sessions (95%). However, this category also contained the skill that was used the least across all categories, with decision aids used in only one session (5%).

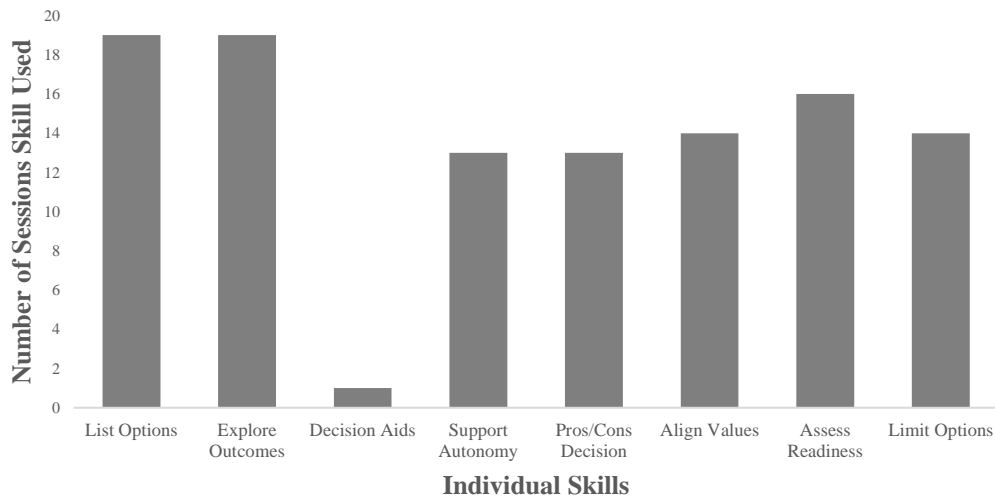


Figure 7

Facilitating Decision Making

Note. This figure depicts the individual skill usage across all 20 sessions for each of the eight skills within the Facilitating Decision Making category. A brief abbreviation of each skill is provided above, while a full description of each skill can be found in Table 1.

In the Patient Activation category, four of the eight skills were used in over 50% of the sessions (Figure 8). Getting commitment/agreement to the action plan was used in 18 sessions (90%). Detailing and summarizing the action plan was used in 17 sessions (85%). Eliciting the barriers and eliciting the facilitators to the action plan were the two skills used the least in this category, with both skills being used in seven sessions (35%).

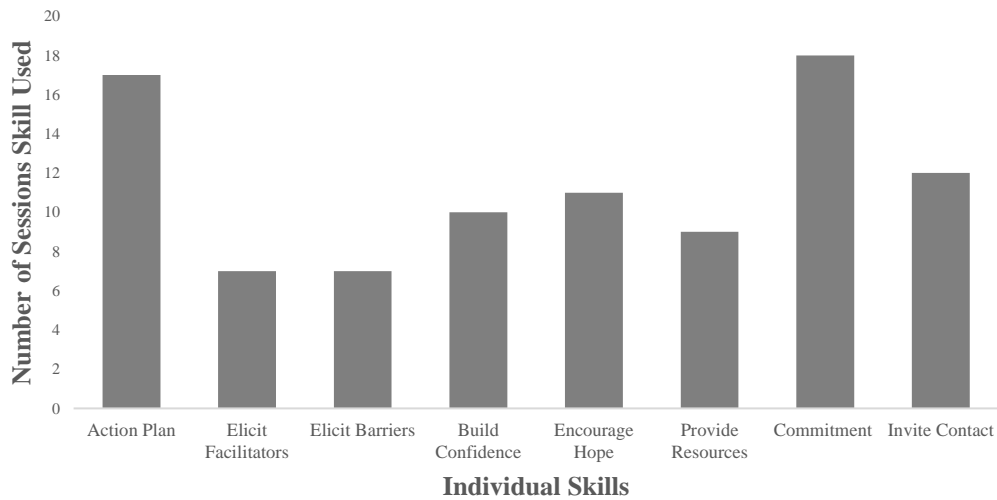


Figure 8

Patient Activation

Note. Figure 8 depicts the individual skill usage across all 20 sessions for each of the eight skills within the Patient Activation category. A brief abbreviation of each skill is provided above, while a full description of each skill can be found in Table 1.

The consensus quality ratings ranged from 3 to 9 (on a 1-10 scale), while the volume of skills used by counselors in sessions ranged from 12-46 (out of 56 total GCSC skills). The average consensus quality rating across all sessions was 7/10, and the average number of skills used in a session was 34/56. Table 4 summarizes the consensus quality ratings and total skill usage for each video, while Figure 9 depicts the correlation between these two variables.

Table 4. Skill Usage and Consensus Quality Ratings for Each Session

Total Skills Used	Consensus Quality Rating
37	8
42	9
31	8
38	8.5
36	8.5
35	7
34	7.5
36	8
12	3
20	4
22	5.5
32	6
39	8
33	7
36	7
31	5
38	7
42	8
41	7.25
46	8.5

Note. Table 4 depicts the total skills used in a session along with the corresponding quality ratings were retrieved from consensus GCSC data.

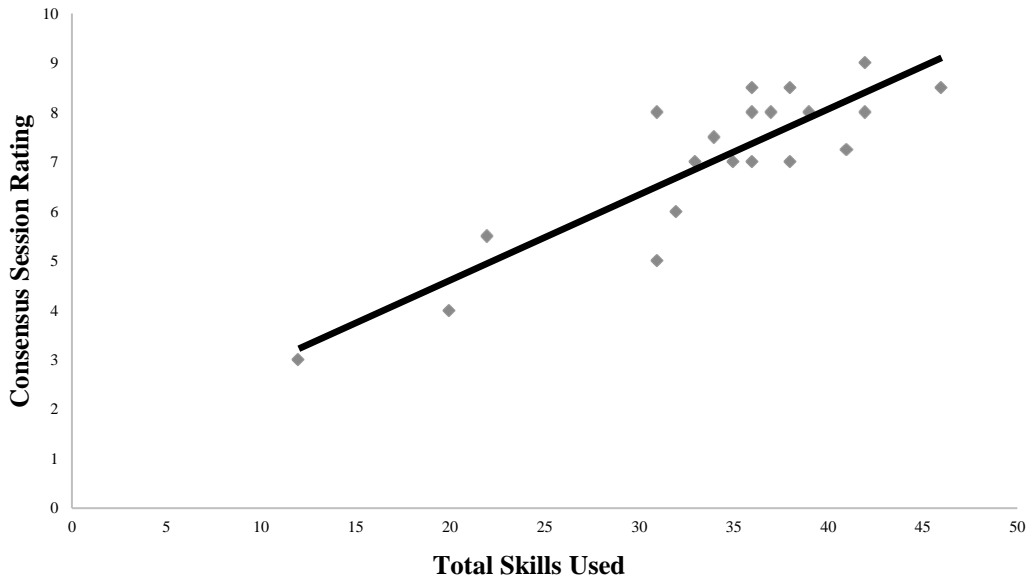


Figure 9

Correlation between total skills used and consensus subjective rating

Note. Pearson correlation analysis between total skills used in a session and the consensus session rating ($r= 0.88$).

CHAPTER 4: DISCUSSION

Using the GCSC, we documented a variety of skills used in prenatal genetic counseling sessions. Our findings can be summarized and contextualized within three broad domains: cross-category comparisons, individual skill usage trends, and implications of the findings to future practice and research.

Cross-Category Comparisons

Looking across categories, we believe Facilitating Decision Making had the highest total usage (68%) because the nature of the indications were heavily focused on some challenging decisions faced by the patients. The NIPT pre-testing session focused mainly on obtaining NIPT consent and the NIPT post-testing session explored diagnostic and termination options. The carrier screening sessions involved presenting multiple carrier screening options in the pre-test session, and the post-screening session for explored reproductive technology decision making. Thus genetic counselors had many opportunities to apply skills related to Facilitating Decision Making throughout these sessions. This is consistent with a previous study that surveyed patients receiving prenatal counseling and found most patients who were facing a decision to pursue prenatal diagnostic testing received sufficient deliberational support (86%) and made decisions consistent with their values (94%) (Baker et al., 2017).

Mutual Agenda Setting, Recognizing and Responding to Emotion, and Building Rapport had similar usage percentages, all between 61-65%. Rapport building and setting a session agenda are globally thought to be foundational elements of any clinical session and crucial for

forming a therapeutic alliance with the patient (Gobat et al., 2015; Leach et al., 2005).

Additionally, assessing and responding to a patient's psychosocial needs has been defined as a core component of the genetic counseling field (Resta et al., 2006).

Educating being the skill category with the least number of skills used was unexpected. Given the complexities of explaining concepts like inheritance, genetic conditions, and testing methodologies, we expected usage in this category would be among the highest. However, it is important to note that coders were only annotating usage of a skill one time per session. In reality, many skills are likely being used more than once in a session, particularly in both the Educating and Responding to Emotion categories. Notably, three of the skills in the educating category: eliciting prior knowledge, tailoring information, and simplifying information were all used in over 75% of sessions and could certainly have been used more than once for different topics that arose throughout, but the GCSC does not track how often each individual skill is used. Consequently, the lower usage percentage in Educating does not mean that prenatal counselors are not educating enough, but rather that certain individual skills related to Educating are not frequently used. A previous study characterized 58% of 89 prenatal genetic counseling sessions as having an educational approach, while both cancer and prenatal sessions on average had 47% of the counselors' dialogue labeled as "clinical teaching" (Roter et al., 2006). These findings from the Roter et al., (2006) study indicate that skills related to educating are potentially being used more frequently than what our study observed and reinforces that more data is required on depth of individual skill usage throughout a session in order to strengthen conclusions regarding cross-category comparisons.

Individual Skill Usage Trends

The Educating category included three skills that were among the most infrequently used in our analysis: use of visual aids, provision of written materials, and summarizing main messages/information. A recent meta-analysis by Lee and Nathan-Roberts (2021) found that implementation of visual aids and written supplemental materials have been associated with increased patient comprehension, recall, and overall satisfaction among patients in the primary care and emergency medicine settings (Dowse & Ehlers, 2005; Delp & Jones, 1996; Lee & Nathan-Roberts, 2021). Therefore, use of these strategies could have been beneficial to the standardized patients, especially given that information load was often heavy, and topics were challenging. If these trends are reflective of modern genetic counseling practice, there exists an opportunity for more counselors to use these skills to help patients understand some of the complex concepts that can arise in a session.

For skills within Building Rapport, the only skill with markedly low usage was attending to the environment, which as mentioned previously, required intentional action by the counselor (such as asking the patient if they could hear or see them) rather than the counselor simply observing that the environment was appropriate. In most cases the internet connections were good and the standardized patients were in a quiet setting, which would not necessitate actively attending to the environment. It is encouraging that skills such as active listening and facilitating two-way communication were used in many sessions, as these two strategies have been shown to strengthen provider-patient relationships and may be associated with positive patient outcomes in inpatient nursing visits (Haley et al., 2017).

The individual skills in the Mutual Agenda Setting and Structuring category that were used in the vast majority of sessions included eliciting the patient's goals for the visit and

addressing patient needs. This suggests that most counselors are both unearthing their patients concerns and following through on addressing them, both of which are hypothesized to have positive impacts on a patient's perception of the session and foster healthy downstream changes (Cragun and Zierhut, 2018). The one skill in this category that was underused in our analysis was encouraging the patient to ask questions. Further use of this specific skill has been hypothesized to help patients overcome traditional authoritarian patient-provider stereotypes while bolstering shared decision making and patient engagement (Judson et al., 2013). This hypothesis proposed by Judson et al., (2013) is primarily based on a prior study where patients reported being hesitant to actively participating in their own healthcare decisions when they perceived their primary care physician as being authoritarian (Frosh et al., 2012).

Risk communication is a major component of a genetic counseling session, as it lays the groundwork for a patient to make informed decisions later in a session (Borle et al., 2018; Hehmeyer et al., 2020; Lobb et al., 2005). Presentation of key risks and avoiding information overload are crucial components that were used in the majority of the 20 sessions. Given that both of the indications in our study involved risk presentation and options that also involved different levels of risk, it was encouraging that this most of the skills in this category were used in most sessions.

Checking for Understanding is a useful strategy that can give a counselor insight into how a patient incorporated the information provided and applied it to their situation. Teach-back was vastly underused by the counselors in our study. Patients may benefit more if genetic counselors were to incorporate this his strategy of eliciting patient summaries because it has been shown to improve the quality of patient education and patient satisfaction in other medical settings such as nursing (Tamura-Lis, 2013).

Most individual skills within the Facilitating Decision Making and Patient Activation categories were used in over 50% of sessions. Many sessions observed that counselors listed appropriate options, explored possible outcomes, and supported patient autonomy as they guided their patients through the decision-making and action planning processes. Given that many of the skills from this category are inspired from previously validated models, such as The Shared Decision-Making model, the Ottawa Decision Support Framework, and motivational interviewing, it was encouraging that most of the counselors we analyzed were applying these skills to help their patients make informed decisions (Elwyn et al., 2012; Hehmeyer et al., 2020; Légaré et al.; 2006, Miller & Rose 2009).

Use of decision aids was the skill used the least across all 56 individual skills, which is reflective of modern practice, unearths a significant opportunity for counselors to incorporate them when guiding a patient through the decision-making process. A prior study found that women facing a decision for prenatal testing benefitted from the implementation of a decision aid booklet that incorporated elements of the Ottawa Decision Support Framework, citing improved informed decision making, knowledge, and patient attitudes (Nagle et al., 2008).

One possible reason that skills related to implementation of external materials, such as use of visual aids, provision of written materials, visual risk presentation, and use of decision aids were all low across the board, is that the virtual environment of these video sessions may make provision and use of such materials harder to do as compared to in-person. Prior studies that surveyed genetic counselors found that video and telephone sessions made the use of visual aids difficult or impossible, which they reported interfered in their ability to communicate complex information to their patients (Burgess et al., 2016; Turchetti et al., 2021). Applying the

GCSC to real-life in-person sessions might provide more clarity on the use of visuals in the current genetic counseling landscape as a whole.

Implications of Skill Use

A significant correlation was found ($r=0.88$) between total skills used and quality ratings. Based on the data, sessions in which genetic counselors used a breadth of communication skills were generally viewed as more successful by both coders. However, we cannot discount observer bias as a potential contributor, given that the two coders hold the GCSC in high regard, and may have implicitly expected results to be positive. It remains unknown whether patients may also be viewing these sessions as more successful, but patient-reported feelings and outcomes were not part of our study. To date, the summation or types of communication skills have been hypothesized to positively influence patient outcomes, but more evidence must be collected before making any strong conclusions (Cragun and Zierhut et al., 2018).

Strengths, Limitations, and Future Prospects

This study provided additional inter-rater reliability evidence for the GCSC and unearthed potential trends and opportunities to increase use of skills in modern practice that have been found to be effective in other medical settings.

To our knowledge, this study is the first to analyze use of multiple distinct communication skills prenatal genetic counselors employ throughout sessions. As mentioned previously, while a prior study of prenatal genetic counseling sessions unearthed broader trends and counseling patterns (Roter et al., 2006), this study checked off specific skills genetic counselors used. Additionally, other prior works were either not specific to prenatal genetic counseling (McAllister & Dearing, 2015), limited in the scope of the skills they analyzed (Fransen & Meertens, 2006),

or focused primarily on patient outcomes rather than counselor style and skills (Yuen et al., 2020).

This study was limited to simulated sessions with a low number of counselors and lack of patient indication diversity. Therefore, additional work is needed to ensure that trends hold across a broader number of counselors and patient indications. Additionally, data involving cross-categorical comparisons speaks primarily about the breadth of skills used rather than the frequency because data on how often each skill was used is not collected as part of the GCSC. Therefore, data cannot be interpreted as representative of the amount of time or focus spent on skills from each category. Finally, we cannot discount observer bias as a contributing factor to the correlational data. It is possible that personal belief in the efficacy of the GCSC tool influenced coders to rate sessions higher that used more GCSC skills.

Observer bias can be reduced by recruiting additional coders assigned only to provide subjective qualitative ratings without use of or exposure to the GCSC. Data on these relationships could answer the question of whether GCs that use more communication skills are truly rated higher by independent observers, as well as the patients they serve. In-person applications of the GCSC with more counselors and indications can support stronger conclusions about our emergent trends in the data. In addition, coders in future projects may collect data on the frequency of each GCSC skill used and identify whether cross-categorical comparisons and relationships between individual skills differ by genetic counseling settings or patient indications. The GCSC may also be used as a tool to analyze whether any of the skills correlate with patient outcomes. Given the inter-rater reliability evidence, preliminary data, and potential applications, we believe the GCSC can be a dependable tool for a variety of future research endeavors.

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APPENDIX A: THE GCSC TOOL

Table 1. GCSC Categories and Skill Descriptions

<i>Category</i>	<i>Skill Descriptions</i>
Building Rapport	<ol style="list-style-type: none"> 1. Attend to environment (ensure patient is comfortable, no hearing/audio issues) 2. Greet patient/family 3. Start off positive early in session 4. Introduce self and state title or role 5. Show respect (few interruptions, be non-judgmental) 6. Employ active listening skills (neutral utterances, summarizing, head nod) 7. Use supportive/collaborative statements 8. Facilitate two-way communication with patient
Mutual Agenda Setting & Structuring	<ol style="list-style-type: none"> 1. Establish mutual understanding of reason(s) for visit 2. Elicit patient's agenda/goals 3. Summarize mutual agenda 4. Encourage patient to ask questions during the session 5. Follow-through with most of the key agenda items 6. Assess and address patient needs throughout the session
Risk Communication	<ol style="list-style-type: none"> 1. Present key risk(s) as percentages and/or frequencies 2. Avoid numeracy overload (round to whole numbers, relevant numbers only) 3. Visual risk presentation (charts/tables, hand gestures) 4. Frame risk to reduce bias (probability of happening/not happening) 5. Assess or clarify patient risk perceptions 6. Contextualize risk (personalized risk, refer to baseline/age-related risks)
Recognizing and Responding to Emotions and Prior Experiences	<ol style="list-style-type: none"> 1. Invite patient to share experiences 2. Acknowledge prior experiences (summarizing, reflections) 3. Recognize and acknowledge emotions that patient shows signs of or brings up 4. Elicit or inquire about emotions not clearly expressed 5. Explore emotions/concerns or ask if patient would like to talk about them 6. Provide time and/or space to process emotions or experiences 7. Provide support (normalize, limit liability, validate) 8. Maintain an affect that matches the patient's emotions or is suitable to situation

Table 1. (Continued)

Educating	<ol style="list-style-type: none"> 1. Elicit patient’s prior or desired knowledge 2. Tailor information to patient’s needs/goals/situation/culture 3. Simplify information to reduce cognitive load 4. Use visual(s) that illustrate key points 5. Give written material summarizing educational information 6. Eliminate information that is overly detailed or does not achieve session goals 7. Summarize main education messages
Checking for Understanding	<ol style="list-style-type: none"> 1. Invite/elicit patient input about the information provided 2. Use of teach-back or a question/statement that gets the patient to summarize 3. Explicitly ask what questions the patient has 4. Elicit patient perspective of how risk/educational information could impact patient’s life or family 5. Patient asks three or more relevant questions throughout that demonstrate they are following conversation
Facilitating Decision Making	<ol style="list-style-type: none"> 1. List or ensure patient is aware of medically appropriate options/actions 2. Explore potential outcomes of options (benefits, risks, possible results) 3. Provide or use decision aids (decision trees/guides) 4. Support patient autonomy (no single right choice, support choice) 5. Provider or patient lists pros/cons or provider gives scenario of what others have done and why 6. Help patient clarify and align their values with options/actions 7. Assess patient’s readiness to make a decision or take action or try to resolve ambivalence if any 8. Limit number or options or break into stepwise decision
Patient Activation	<ol style="list-style-type: none"> 1. Detail and summarize an action plan of next steps 2. Elicit facilitators to help successfully enact plan (support systems, coping) 3. Elicit barriers to action plan and discuss ways to overcome them 4. Build confidence (affirmations, acknowledge strengths, encourage participation) 5. Encourage hope (positive reframing, use uncertainty to encourage hope) 6. Provide support resources and/or referrals 7. Obtain agreement/commitment on action plan from patient 8. Invite patient contact (provide contact information)

Note. The above table depicts the eight GCSC skills categories along with description of the individual skills that belong in the category. Some specific examples of certain skills are listed in parentheses. Developed by Hehmeyer and colleagues in a prior study, a checklist similar to this was used by coders DC and AI to annotate observed skills in sessions.