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Interpersonal communication dynamics during extension agent-farmer advisory interactions at farm level

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Abstract

Consider a typical farm visit: the extension agent arrives with technical recommendations, speaks for twenty minutes, and leaves but how much of that interaction actually results in farmer understanding and action? This research examined interpersonal communication dynamics during extension agent-farmer advisory interactions at farm level in Serbia. Paired assessments were collected from 78 extension agent-farmer dyads across Vojvodina and Sumadija regions, combining structured observation of 156 farm-level advisory sessions with post-interaction surveys of both agents and farmers between March and November 2022. Six communication competency dimensions were assessed: active listening, questioning skills, non-verbal cue awareness, empathy and rapport building, technical simplification, and feedback solicitation. Agent self-ratings exceeded farmer perceptions on five of six dimensions, with the largest gap appearing in technical simplification (agent mean = 3.56, farmer mean = 2.18, $p < 0.001$). Non-verbal cue awareness was the only dimension where farmer perceptions (3.61) exceeded agent self-ratings (3.28). Interaction quality scores correlated positively with farmer comprehension ($r = 0.58$, $p < 0.01$) and stated intention to adopt recommendations ($r = 0.49$, $p < 0.01$). Sessions lasting 25-35 minutes produced the highest comprehension scores, while sessions exceeding 45 minutes showed declining farmer attention. These findings reveal a systematic perception gap between agents and farmers that may undermine advisory effectiveness.

Keywords: Interpersonal communication, extension agents, farmer advisory, communication dynamics, farm-level interaction, agent-farmer relationship, technical communication, advisory quality, Serbia agriculture, extension effectiveness

Introduction

An extension agent explaining integrated pest management sits across from a farmer who nods politely but later admits she didn't follow most of the technical terms. This scenario, familiar to extension professionals worldwide, illustrates a gap at the heart of agricultural advisory services: the difference between information delivered and information received ^[1]. Extension effectiveness depends not only on the quality of technical content but on how that content is communicated during face-to-face interactions that remain the backbone of advisory services even as digital channels expand ^[2].

Communication research in extension has traditionally focused on message design and channel selection rather than the interpersonal dynamics of the advisory encounter itself ^[3]. Yet evidence from health communication and counseling psychology shows that provider-client interaction quality strongly predicts whether advice is understood, trusted, and acted upon ^[4]. In Serbia, where the agricultural advisory service employs approximately 340 field agents serving over 600,000 registered farm holdings, each farm visit represents a limited opportunity to influence practice ^[5]. Understanding what happens during these interactions how agents communicate, how farmers perceive that communication, and where mismatches occur could point to practical improvements in advisory effectiveness. This

research examined interpersonal communication dynamics during extension agent-farmer advisory interactions at farm level, comparing agent self-perceptions with farmer assessments across six communication competency dimensions.

Materials and Methods

Materials

A dyadic research design paired extension agents with farmers they advised during routine farm visits. The research covered Vojvodina (northern plains) and Sumadija (central hills) regions, representing Serbia's two major agricultural zones ^[6]. Seventy-eight agent-farmer dyads were recruited through regional advisory service offices, with each dyad observed during two farm-level advisory sessions (156 sessions total). The research instrument comprised three components: a structured observation checklist based on the Interaction Analysis System adapted for extension contexts, a 36-item agent self-assessment questionnaire, and a parallel 36-item farmer perception questionnaire, both covering six communication competency dimensions ^[7]. Data collection occurred between March and November 2022 through the Faculty of Agriculture, University of Novi Sad, Serbia. Pilot testing with eight dyads in Backa Palanka municipality refined observation protocols and questionnaire wording.

Methods

Paired-samples t-tests compared agent self-ratings with corresponding farmer perception scores across all six communication dimensions. Pearson correlations examined relationships between interaction quality scores and advisory outcomes (farmer comprehension, adoption intention). One-way ANOVA tested the effect of session

duration on comprehension scores with Tukey post-hoc comparisons. Intraclass correlation coefficients assessed agreement between the two observation sessions per dyad. Multiple regression identified which communication dimensions best predicted overall interaction quality as rated by farmers [8, 9].

Results

Table 1: Agent Self-Ratings vs Farmer Perceptions across Communication Competency Dimensions (n = 78 dyads)

Dimension	Agent mean	Agent SD	Farmer mean	Farmer SD	Gap	p-value
Active listening	3.92	0.54	2.87	0.78	+1.05	<0.001
Questioning skills	3.71	0.63	2.43	0.84	+1.28	<0.001
Non-verbal cues	3.28	0.71	3.61	0.66	-0.33	<0.05
Empathy & rapport	4.14	0.48	3.42	0.73	+0.72	<0.001
Technical simplification	3.56	0.67	2.18	0.91	+1.38	<0.001
Feedback solicitation	3.03	0.72	1.94	0.86	+1.09	<0.001

Agent self-ratings exceeded farmer perceptions on five of six dimensions. The largest perception gap appeared in technical simplification (+1.38 points) followed by questioning skills (+1.28). Non-verbal cue awareness was

the only dimension where farmers rated agents higher than agents rated themselves (-0.33), suggesting agents underestimate their non-verbal communication effectiveness while overestimating their verbal competencies.

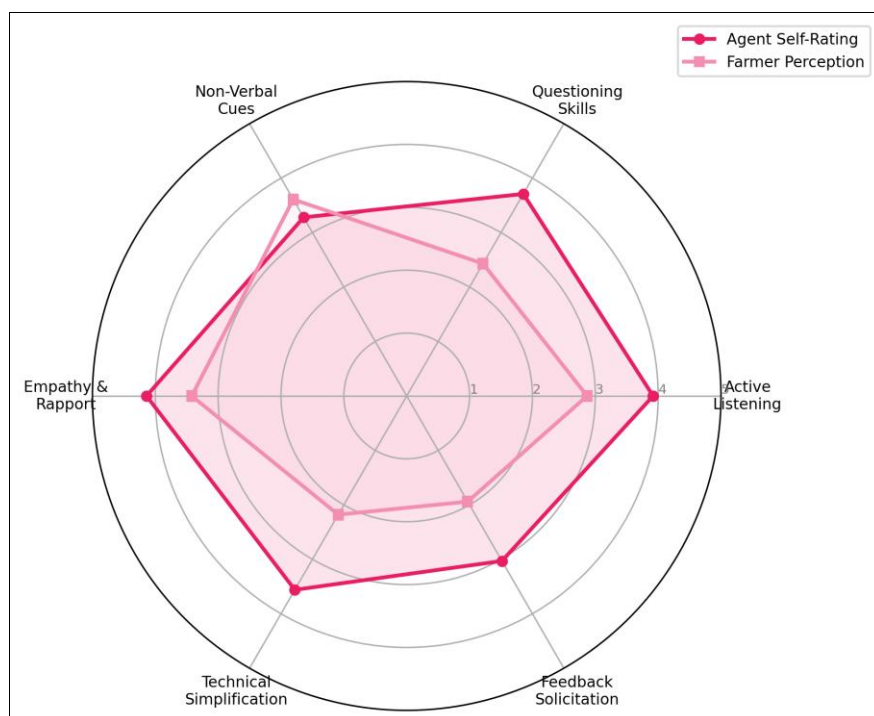


Fig 1: Radar chart comparing agent self-ratings and farmer perceptions across six communication competency dimensions

The radar chart visually highlights the perception gap pattern: agents consistently rated themselves higher on verbal communication skills (questioning, active listening,

feedback solicitation) while the gap narrowed or reversed for non-verbal and relational dimensions (empathy, non-verbal cues).

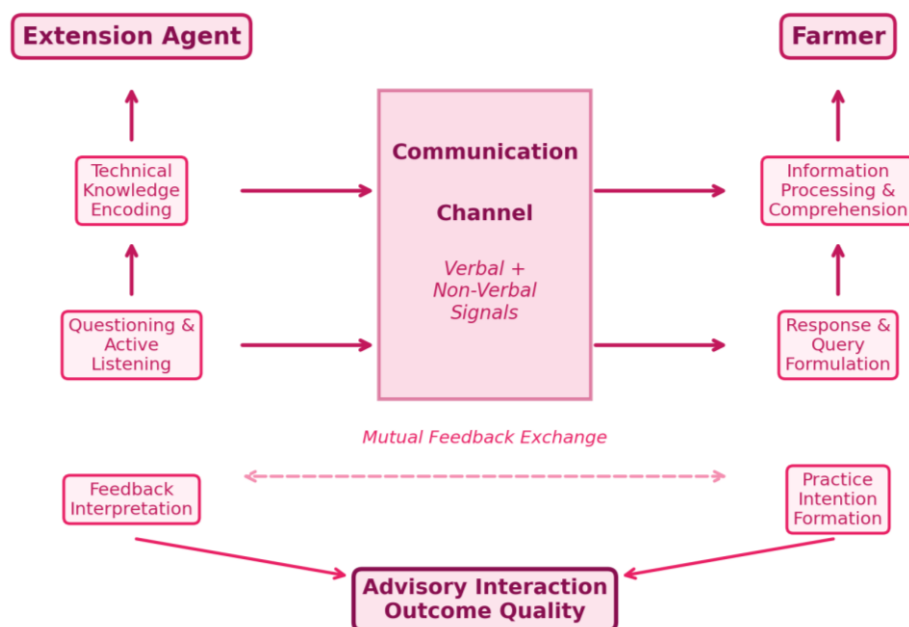


Fig 2: Mechanism diagram of interpersonal communication dynamics during extension agent-farmer advisory interactions

The model depicts the bidirectional communication flow between extension agent (encoding technical knowledge, questioning, interpreting feedback) and farmer (processing information, formulating responses, forming practice intentions) through a verbal and non-verbal communication channel, converging in advisory interaction outcome quality.

Discussion

The systematic perception gap between agents and farmers is the central finding of this research. Agents believed they were communicating effectively particularly in simplifying technical content and soliciting farmer feedback while farmers perceived these same dimensions much less favorably. This pattern has been documented in health provider-patient communication but is new to the extension literature [4, 10]. The technical simplification gap (1.38 points) is especially concerning because it suggests agents may not recognize when their explanations are too complex, a blind spot that directly undermines information transfer.

The reversal on non-verbal cues, where farmers rated agents higher than agents rated themselves, is an interesting exception. It may indicate that farmers, particularly in rural Serbian contexts where interpersonal warmth is culturally valued, are attuned to body language, eye contact, and tone even when agents don't consciously manage these signals [11]. Extension training programs typically emphasize content preparation and presentation skills but give less attention to non-verbal communication competency, even though the data suggests this is an area where agents already perform well from the farmer's perspective.

The finding that 25-35 minute sessions produced optimal comprehension scores has direct scheduling implications. Sessions shorter than 20 minutes may not allow sufficient time for farmer questions and two-way exchange, while sessions exceeding 45 minutes showed attention decline. This aligns with attention research showing that sustained focus on novel information typically peaks around 20-30 minutes before requiring a break or shift in activity [12, 13].

Limitations

The presence of an observer during advisory sessions may have altered both agent and farmer behavior, a well-known reactivity effect in observational research. While the two-session design aimed to reduce this through habituation, first-session scores were not separately analyzed. The sample was limited to two Serbian regions, and communication dynamics may differ in other cultural contexts where power distance between experts and farmers varies. Farmer perception scores may partly reflect general satisfaction or dissatisfaction rather than accurate assessment of specific communication skills. Longitudinal tracking of whether interaction quality predicts actual practice change (beyond stated intention) was beyond the scope of this cross-sectional design [14].

Conclusion

This research examined interpersonal communication dynamics between extension agents and farmers during farm-level advisory sessions in Serbia. A consistent perception gap was identified: agents overestimated their communication effectiveness on most verbal dimensions while underestimating their non-verbal competency. Technical simplification and feedback solicitation showed the largest mismatches, pointing to specific areas where agent training could improve. The optimal session duration of 25-35 minutes offers a practical scheduling guideline for extension managers. These findings argue for incorporating farmer-perceived communication quality into agent performance assessment rather than relying solely on agent self-evaluation or output metrics like visit counts. Extension training programs should include feedback from actual farmer interactions and give greater attention to the skills farmers value most: making technical content understandable and genuinely asking for farmer input [15, 16, 17, 18].

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