

## A Behavioral Analysis of Conversation

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## Children with autism

- Scripted, ritualistic language – insufficient variability
- Too few requests for information from others
  - Their opinion
  - Their experience
  - Feedback on what they have said
- Poor control by prior verbal stimuli: Poor listener behavior
- Too tight intraverbal control: failure to follow the subtle thread of a conversation and change of direction.
- Narrow range of topics engage them. (MO control)

- Weak use of reinforcers (“uh-huh,” “I see”)
- Weak prosody (sometimes)
- Weak or abnormal pronoun usage
- Self-editing may be absent (“I meant to say...”)
- Weak use of supplementary stimulus control techniques
- Conditional discriminations weak
- Divergent multiple control weak (verbal stimulus may have only one “meaning”)

- What factors maintain “good conversation”?
- How are conversation skills conditioned?
- How can we establish control by “natural” variables in conversation?
- What is the role of sentence frames?
- Are some frames more important than others? Should they be taught directly, or will they emerge?

## Reasons to care

- Isolation, alienation, and unintentional ostracizing attend people who are “different,” and verbal behavior is a distinctive marker of difference in autism and other disabilities.
- Conversation is the medium through which relationships develop:
  - How I feel; my dreams, my worries; what thrills me; what terrifies me.
  - How you feel; your dreams, worries, thrills, & terrors.

## Challenges for the autistic

- Conversation can be extremely complex and depends upon a sensitivity to multiple controlling variables (acting simultaneously).
  - Often depends upon verbal memory, which is itself a complex skill and which may have to be taught as a precursor.
  - Conversation is often “context free.” Listener’s behavior is wholly conditioned by speaker. Listener must acquire special skills in order for this to happen, and must organize his own verbal behavior in structural ways to make it happen in the other party in turn.
  - Much variation from topic to topic.

## More challenges

- Most relevant variables are social.
- The language of the inner world is acquired in a special way that often makes it metaphorical rather than concrete and explicit. Our ability to “know ourselves” depends on this kind of conditioning. (See Skinner, 1945: The operational analysis of psychological terms)
- All of these are formidable challenges for people who are not strongly reinforced by social variables.

## Fortunately...

- Conversational ability lies on a continuum. It isn't all-or-none.
- Our task is to try to help people move up the scale of conversational complexity.
- For most people, mastering conversational skills is an example of a behavioral cusp.
  - viz., a related set of behaviors that expose the person to a lot of new natural contingencies; they open a lot of doors that permit the automatic expansion of one's repertoire. (Ability to read is the classic example of a cusp.)
- Any progress we can make is likely to be supported by the natural environment.

## Goals

- To analyze conversation from a behavioral perspective:
  - What are the cues?
  - What are the component skills?
  - What are the reinforcers?
  - How can it be improved?
- We will see that, in many cases, conversation is so complex that our account must be highly speculative.
  - Nevertheless, as noted above, our goal is not all-or-none; every little bit helps.

## A Related Field

- Conversation Analysis is a field in its own right, a field within sociology.
- It provides a description of the strategies of typical conversations, but they are necessarily context-specific and idiosyncratic.
- It is not analytical and does not rest upon behavioral principles.
- That is, it describes the 'what' but not the 'why' or 'how' of conversation.
- For our purposes, it is hard to extract guidance from CA.
- Little of what follows is derived from conversation analysis, but there is necessarily overlap.

## A review of the literature

- Skinner (1957) discusses conversation only incidentally, in the context of other things.
- Ullin Place (1991) showed how many of the concepts of conversation analysis can be translated into behavioral terms, but it was a very limited exercise.
- The behavioral literature (mostly JABA –the Journal of Applied Behavior Analysis) has a score of articles on the topic, but mainly showing how specific conversational skills can be taught.
  - Some excellent ideas therein, but the literature does not provide a comprehensive analysis of the domain.

- My invitation to this conference strongly suggested that I should offer my own original analysis of conversation, and that is what I have attempted to do.

## A few concepts and principles

- Reinforcement & Punishment
  - But great individual differences in what is reinforcing & punishing.
  - Small differences can accumulate to huge discrepancies over time.
- Extinction
- Generalization
- Covert behavior
- Multiple control

- Motivating operation (MO)
- Discriminative stimulus (SD)
  - Distinction highlighted by German conductor.
  - Almost all verbal exchanges involve both.
  - Analysis of conversation varies considerably with MOs and SDs.

## More terminology

- Mand (Requests)
- Tact (Labels)
- Intraverbals
- Echoics
  - All of the above can be taught in straightforward ways but by themselves make limited contributions to conversation
- Sentence frames
  - These are orders of magnitude more complicated but contribute much to conversation.

## II. Five examples of types of conversation (among many)

- A) ONE-SHOT EXCHANGES between strangers:
  - Asymmetrical: Speaker #1 (S#1) dominates.
    - Typically a mand, with a conspicuous motivational variable.
  - Initially a weak MO, or none, for S#2.
  - S#1 provides MO for S#2 by addressing him
  - Conversation peters out after main MO is resolved.

## Examples

- #1 Can you tell me where the bathroom is?
- #2 Last door on your right.
- #1 Thanks.
- #2 Don't mention it.
  
- #1 Excuse me, you dropped your scarf.
- #2 Thank you!
- #1 No problem.

## Why does the conversation die?

- Speakers 1 & 2 are strangers.
- Subtle social rule (that varies from culture to culture and group to group) viz., strangers don't talk to one another without a good reason (MO).
- S#1 breaks the rule because of the MO. Acceptable to both parties. (Cf. "How do you like my hat?" "Do you want to sleep with me?")
- After S#2 responds, the motivating variable is resolved.
- Social rule (not subtle) requires a couple of ritualistic responses ("Thank you," etc.)
- As there is plenty of ritual and only a couple of variables, this sort of exchange is relatively simple, and a good place to start in shaping up conversation skills.

## B) One-shot with elaboration

- S#1 under control of strong MO, as above, but when MO changes abruptly, speakers fall under control of incidental variables. Much closer to what we mean by "conversation."
- Example
  - Excuse me, you dropped your scarf.
  - Thank you! It was my grandmother's. I'd feel awful if I lost it.
  - It's beautiful. Is it silk?
  - I don't know. She got it when she was living in Turkey.
  - Oh! ... Very nice.
  - Thanks again.
  - So long.

## Why the difference?

- 1) It is always easier to speak a second time after having spoken once. That is, speech becomes an MO for more speech.
  - Uncertainty about social norm has been resolved.
  - Other person has revealed himself as someone who reinforces one's speech.
- 2) Differences in motivating conditions:
  - Act of kindness unsolicited
  - Magnitude of discrepancy
- 3) Possible other variables (not behavioral process)
  - Speakers are not in a rush
  - Person is attractive
  - Person is lonely
  - Etc.

- The incident has "broken the ice," and incidental variables exert control, but overarching contingencies take over again, as the speakers have places to go.
- But if they are thrown together for a long time, as on an airplane or a bus, the conversation may go on for a long time.
- After a while, an aversive contingency kicks in: If we stop talking and look out the window, it may be seen as rude. ("I'd rather sit in silence than talk to you.")

The point of these examples is that even though they are simple, a sensitivity to social conventions is required.

It would be easy to behave in a way that would be thought odd, awkward, or inappropriate. And of course there are many other ways the exchanges could have gone, depending on circumstances. (Treacherous ground for the autistic.)

## C) FUNCTIONAL, DIRECTED CONVERSATION

- Asymmetrical.
- S#1 leads and S#2 follows.
- Governed by an overarching MO.
- Each entry by S#1 is controlled partly by that MO and partly by the responses of S#2.
- Conversation has a theme and a direction.

## Example

- S#1: Where were you last night?
- S#2: I went out with Al.
- S#1: Where did you go?
- S#2: We went to Bart's and then we hung out.
- S#1: Did you go to a bar?
- S#2: No. What makes you think that?
- S#1: I don't want you going out drinking to all hours of the night.
- S#2: Well, I wasn't out till all hours, and I wasn't drinking.

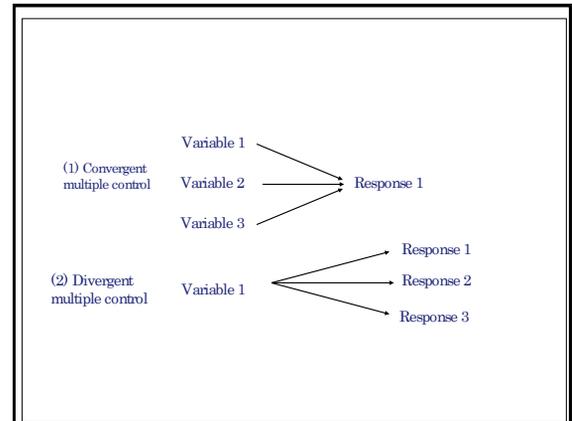
### Example 2

- P. G. Wodehouse, *Much Obligated Jeeves* (p. 58)
- Nasty exchange between Roderick Spode and Bertie Wooster and Roderick Spode, who thinks Bertie is trying to steal his frightful fiancée, Madeline Bassett.
- The conversation has a direction, a purpose, and an “exit line.”

- Such examples can go on for as long as the overarching MO is in effect.
- Each response of S#1 is under multiple control of
  - 1) The overarching theme
  - 2) The previous response of S#2

### Multiple control: ubiquitous in verbal behavior

- Convergent multiple control: Behavior that is influenced by more than one antecedent.



- Multiple control might be a formidable problem for an individual with autism, a disorder in which “overselectivity” is often observed.
- (But speakers are asymmetrical in this regard)

### D) SPONTANEOUS, DESULTORY CONVERSATION

- (E.g. Wodehouse, p. 21)

- Each statement serves as a dominant variable for what follows.
- Each statement has an effect on the listener who must understand what was said, track the shift in MOs entailed by what was said, and respond with respect to both variables and add something new.
- Each utterance is likely to be novel, at least in its details. They can't simply be trained, for there are too many possibilities.
- Moreover, these seemingly simple conditions mask highly complex performances.

- "His dinners must fortify you for the tasks you have to face. How's the election coming along?"
  - An example of responding to the speaker and initiating something to which the speaker must respond. A common feature of conversation, an acquired skill.
  - Anatole's cooking → fortification → tasks → MO for query about election.
  - S#1's remark "It's a wonderful place" initiated a sequence of events that established a strong MO. How does that happen? (Conditioning the behavior of the listener.)

## E) Narration with a listener

- S#1 has "something to tell" S#2. Example: Wodehouse (p. 23)
- Each speaker is also a listener, not just to the other person but to himself.
- Behavior is partly under control of a state of affairs, but often that state of affairs is absent at the moment of the conversation.
- But he must not repeat.
- He must present things in an optimal order.
- He must be sensitive to what the listener already knows. (e.g., Wodehouse, p. 10)
- Meanwhile, the listener has to be giving periodic feedback to the speaker to signal understanding, confusion, boredom, etc.
- All of this is orders of magnitude more complex than one-shot mand conversations.

## Conventional elements of conversation

- 1) Turn-taking: Holding the floor until one's conversational unit is complete.
  - That fact must be discriminated by both parties.
  - But each turn may consist of many units of verbal behavior.
  - What is a unit? Elementary operants (tacts, mands, etc.). But elementary operants often combine to form complex strings with their own functional unity (sentences, narratives, proposals, etc.)

- Identifying coherent conversational unit on the fly requires
  - Responding as a listener to one's own verbal behavior.
  - Evaluating it with respect to the MO
  - Self editing; self-correction

## Turn-taking behaviors

- Holding the floor until one's conversational unit is complete:
  - Using connector phrases.
    - "And then..."
    - "And that's not all..."
  - Filling pauses
    - Saying "uh..."
    - Using meaningless fillers like, "I mean..." and "What I'm trying to say is..."
  - Intonation
  - Facial expression

## Turn-taking: Giving up the floor.

- Each turn typically ends with cues to transfer control.
- Pausing
  - Pauses of more than a second are distinctive, but can be overridden by context. If rate is very low and erratic, long pauses may be tolerated without transfer of control. Note effect of delayed signals in telephone conversations.
- Intonation
  - Rising intonation of a question. Falling intonation of a statement, often with emphasis, followed by pause.
- Physical cue (expectant expression)

## Other elements

- Asking questions (Serves multiple functions: Reinforcer, SD & MO)
  - S#1 must have evoked responses in S#2 that occasion questions. (Narrative imagery. Cf hang-gliding)
- Checking to see if listener is following
- Attending
  - Echoic behavior
  - Covert behavior (imagery, elaboration, rehearsal)

- Reinforcing the speaker
  - Facial expression
  - Saying “uh-huh,” etc. (telephone)
  - Eye contact (try looking a foot to the left of the speaker)
  - Posture
  - Maintaining appropriate interpersonal distance
- Repeating and clarifying as needed/ Signaling confusion

## Presumably these are skills that can be taught.

- Walden II, p. 214:
- They quickly learned that I was a college professor and began to ask me about my work. Frazier's confounded system of education must have included a study of the techniques of conversation, for they drew me out deftly and began to bear down with a series of embarrassing questions. Why did colleges make their students take examinations, and why did they give grades? What did a grade really mean? When a student "studied" did he do anything more than read and think—or was there something special which no one at Walden Two would know about? Why did the professors lecture to the students? Were the students never expected to do anything except answer questions? Was it true that students were made to read books they were not interested in? I escaped before my five minutes were up and hurried past the next two stages to make my departure seem convincing.

- But all these skills are ordinarily acquired without instruction, through natural contingencies. If they are missing, we will have to build a curriculum to teach them
- Notice how many discriminations are required just to maintain the superficial framework of a conversation, before any content has been added.
- Each one of these distinctions might be the subject of a substantial program of training, but they are only naturally reinforced when they occur in concert, that is, all together.

- Let's go back to the “conventional elements” and look at the magnitude of the teaching task.

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## Relevance of MO magnitude

- Social rules can be overridden by MOs.
  - E.g., Powerful narratives can demolish social restrictions on speaking to strangers.
    - Events of 9/11
    - Kevin's accident
  - A guy on the make
  - Asking directions
  - Ordering food
  - Gossip
  - Job-related VB: conductor; guard; attendant; housemaid;

## Audience variables

- Both social rules and conversational content are highly sensitive to audience variables.

- All other things being equal, the greater the history of reinforced behavior, the stronger the vb. MOs and SDs tend to vary with one's experience with listener.
- Strangers: Weak MOs, weak SDs, weak vb
- A married couple or two friends at dinner.
  - Common history: Strong SDs -- the most trivial events are discussed
  - MOs can be weak, and they sit in comfortable silence
- Subway: Many speakers; common history, but still poor audience control, as no strong MO;
- Airplane: Single audience; poor audience control but MO stronger. Silence can be aversive in 1:1 situation

- Two people in an elevator
- Sitting in an auditorium
- Foreign country
- Tendency not to sit right next to someone in theaters, etc.
- Reunion: Long history, strong audience control, Strong MO; strong SDs
- Man in a cave; stranger; no history; but very strong MO,

- Meet a Martian on the space station. Very strong MO overrides total lack of SDs.
  - Who? What? How? When? Where?

- Context specific social conventions: In big cities, eye-contact is uncommon; hailing strangers unheard of.
- In my experience, in small towns, in the South, and in Latin America people are more likely to speak to strangers.
- No doubt many other macro- and microcultural differences.

How might audience variables and motivational variables miscarry in autistic children?

- Usually very restricted histories.
  - Normalization helpful, but may not be sufficient
- May be insensitive to MOs (personal, vocational, literary experiences may be outside the norm).
- Even if skills are in repertoire, they may not come to strength in appropriate contexts.
- To an autistic child, everybody may be like a person in a foreign country- Can't tell if there is a foundation for a conversation.

### Role of elementary verbal operants

- Tacts and mands are relatively straightforward to teach, but play limited role in conversation:
  - Mands, yes, but conversation tends to dry up after MO is resolved, as noted above
  - Tacts less likely to play a major role as both speakers are usually privy to the same physical environment.

### Exceptions to the limited role of tacts

- 1) One person has the binoculars, periscope, etc., or has some other advantage over the other party.
  - Here an autistic child with a good tact repertoire could answer questions effectively:
    - Who do you see?
    - What are they doing?
    - Who is driving?
    - Is anyone coming on the right?
    - Etc.

### Exception #2

- Tacts under control of private stimuli.
- How do people typically acquire a tact repertoire with respect to their private behavior, since tact acquisition requires reinforcement by verbal community.
  - "Yes, that's a garden snake." "No, that's not a volleyball; it's a soccer ball."
  - "No, you're spleen doesn't hurt; that's your kidney."

### Skinner (1945)

- Ways of bringing tacts under control of private events.
  - Always imprecise in everyone
  - Relatively weak
  - Depends on reliable correlations of public manifestations with internal events.
- Likely to be less precise in autistic.

- “One-shot” mand conversations should be relatively easy to train in autistic children both as Speaker #1 and #2.
- Tact conversations should be achievable with autistic person playing role of Speaker #2.
  - Playing role of S#1 is much more complicated.
- Desultory conversation very formidable indeed.
  - Why?

### Complex speaker behavior and complex listener behavior

- In many conversations, the verbal behavior is relatively “context-free.” The verbal behavior itself is the dominant variable.
- Each verbal response evokes a lot of behavior in the listener, and that behavior serves as one of the controlling variables for subsequent verbal behavior in the listener.
  - E.g., “I was knocked unconscious at 10,000 feet” evokes emotional, imaginal, echoic, and other behavior in the listener. Many questions follow.
- But conditioning the behavior of the listener is a complex topic in its own right.

### Complex speaker behavior

- Prosody
- Frames
- Sentences:
- Conditioning the behavior of the listener
- Automatic reinforcement

### Listener behavior

- Attending
- Echoic
- Responding discriminatively to verbal SDs
- Imagery
- Memory
  - Problem solving behavior
  - Supplementary stimulus control procedures
- Multiple control