The logic of intention reports

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Abstract:
Unlike belief and desire reports, intention reports (e.g., John intends to leave soon) are not well studied in formal semantics. This paper aims to begin to fill this gap, focusing on empirical similarities and differences that intention reports bear in relation to other attitude reports and to other expressions that involve intentional action. These empirical properties are shown to follow from the view that an intention report a intends p denotes true iff a has a maximally ranked ACTION-RELEVANT or EFFECTIVE PREFERENCE (in the sense of Condoravdi and Lauer 2016) that a bears the RESPONSIBILITY relation (in the sense of Farkas 1988) to p. Also discussed are intention reports that do not involve syntactic control (e.g., John intends for Bill to leave soon), which in some previous literature have been argued to involve coercion. The proposed semantics for intend enables a coercion-free analysis of such sentences, and issues surrounding the choice between a coercion-free and a coercion-based approach are discussed.
## Contents

1 Introduction .................................................................................................................. 3

2 The empirical landscape ................................................................................................. 5
   2.1 Realism ..................................................................................................................... 6
   2.2 Conjunction Introduction ......................................................................................... 7
   2.3 Monotonicity ............................................................................................................ 9
   2.4 Non-gradability ....................................................................................................... 10
   2.5 Anankastic conditionals ......................................................................................... 11
   2.6 Responsibility ......................................................................................................... 13
      2.6.1 The causation effect ......................................................................................... 13
      2.6.2 Interaction with (un)intentionally ................................................................. 14
      2.6.3 Uncontrollable outcomes ............................................................................... 14
      2.6.4 Conditions of satisfaction ............................................................................... 15

3 Analysis part 1: *intend* as an effective preference predicate .................................. 16
   3.1 Background on Condoravdi and Lauer 2016 ......................................................... 16
   3.2 Back to *intend* .................................................................................................... 18
      3.2.1 Realism .......................................................................................................... 19
      3.2.2 Conjunction Introduction .............................................................................. 19
      3.2.3 Monotonicity .................................................................................................. 21
      3.2.4 Non-gradability .............................................................................................. 24
      3.2.5 Anankastic conditionals ............................................................................... 26
      3.2.6 Responsibility ................................................................................................. 30

4 Analysis part 2: *intend* and the `RESP`-relation ..................................................... 31
   4.1 Background on Farkas 1988 .................................................................................. 31
   4.2 Back to *intend* .................................................................................................... 33
   4.3 More on the `RESP`-relation ................................................................................ 35
      4.3.1 Probing the semantic type of the `RESP`-relation ........................................... 35
      4.3.2 Probing the content of the `RESP`-relation ..................................................... 38

5 Compositionality: To coerce or not to coerce? ............................................................ 39

6 `RESPlessness` ............................................................................................................. 42

7 Comparison to previous approaches .......................................................................... 48
   7.1 Grano 2015 ............................................................................................................ 48
   7.2 Pearson 2016 ......................................................................................................... 50

8 Conclusions and outlook ............................................................................................... 53
1 Introduction

The context for this paper is set by two empirical areas that have been central to many investigations in formal semantics. The first area is mental attitude reports, including especially belief reports like (1a) and desire reports like (1b). The second area is a family of morphemes and structures that encode in some way the idea of intentional action, and these include inherently intentional verbs (2a), agent-oriented adverbs (2b), rationale clauses (2c), and imperatives (2d).

(1) a. John thinks it’s raining.
   b. John wants to go home.

(2) a. John murdered Bill.
   b. John intentionally broke the window.
   c. John broke the window in order to get inside.
   d. Break the window!

At the intersection of these two areas lie intention reports like (3). Speaking informally, intention reports are used to describe a kind of internal commitment or resolve on the part of the attitude holder to carry out some action.

(3) John intends to leave soon.

But despite the wealth of literature surrounding mental attitudes on the one hand and intentional action on the other hand, the formal semantics literature is rather sparse when it comes to intention reports. A broad goal of this paper is to begin filling this gap, in a way that elucidates the empirical similarities and differences that intention reports bear in relation both to other mental attitude reports and to other phenomena that involve intentional action.

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1The literature on mental attitude reports is much too vast to do justice to here, but the particular corner of that literature most relevant to this paper is the one that focuses on the nuances of desire reports. Important work in this vein includes Stalnaker 1984; Asher 1987; Heim 1992; Giannakidou 1999; von Fintel 1999; Levinson 2003; Villalta 2008; Crnič 2011; Lassiter 2011; Rubinstein 2012; Anand and Hacquard 2013; Condoravdi and Lauer 2016.

2See, for example, Dowty 1972; Zwicky and Sadock 1975; Kamp 1999–2007; Martin and Schäfer 2014 on inherently intentional verbs, Egré 2014 on intentional(ly), and Farkas 1988 on rationale clauses. Imperatives, like mental attitudes, have inspired a literature much too vast to survey here, but see Zanuttini, Pak, and Portner 2012:1260–1263 for an illuminating overview of some of that literature.

3Looking to the philosophy literature, see Bratman 1987 for a characterization of intention in which commitment plays an important role. See also Setiya 2014 for a useful overview of the philosophical literature on intention.

4The few previous treatments of intend in the semantics literature that I am aware of are: a recent proceedings paper (Grano 2015), as well as brief remarks made in passing by Heim (1992:199-
The central thesis of this paper is the marriage of two ideas, one drawn from the mental attitude literature and one drawn from the intentional action literature. On the mental attitude side, I follow Condoravdi and Lauer’s (2016) proposal that in modeling an attitude holder’s preferences, some linguistic phenomena are sensitive to a privileged subclass of preferences called \textsc{action-relevant} or \textsc{effective preferences}, defined as preferences that an agent uses to guide his or her actions. As a subclass of preferences, they bear certain similarities to ordinary preferences such as those routinely expressed via desire reports using \textit{want}. But since they are used to guide action, they are also subject to certain rationality constraints that make them similar in other ways to beliefs. On the intentional action side, I follow Farkas’s (1988) proposal that some linguistic phenomena invoke the \textsc{resp}onsibility-relation. On the version of this relation pursued here, \textsc{resp} is true of an individual \textit{a} and a proposition \textit{p} iff \textit{a} intentionally brings it about that \textit{p}.

Putting these two ideas together sets the stage for:

(4) \textbf{Central thesis of this paper:}
\[
[a \textit{intends} p]^{w} = 1 \text{ iff } \textsc{resp}(a, p) \in \max[\text{Effective-Preference}(a, w)]
\]

(A sentence of the form \textit{a intends} \textit{p} denotes true iff the proposition that \textit{a} stands in the \textsc{resp}-relation with \textit{p} is a member of \textit{a}’s maximally ranked effective preferences in the evaluation world.)

Once properly unpacked, (4) makes sense of a host of empirical properties associated with intention reports to a greater degree of accuracy than any other approach I am aware of. The bulk of this paper is concerned with laying out these empirical properties, unpacking (4), and showing how the latter explains the former.

Against the backdrop of (4), a secondary goal of this paper is to engage with a corner of the literature in which intention reports have interacted with the study of syntactic control: a number of linguists including Perlmutter (1968); Jackendoff (1996); Jackendoff and Culicover (2003); Culicover and Jackendoff (2005); Grano (2015) have observed that when \textit{intend} combines with a complement that is not syntactically controlled, as in (5a), the resulting sentence is intuitively paraphrasable as a minimally different sentence in which the complement to \textit{intend} is embedded under a causative predicate syntactically controlled by the attitude holder, as in (5b).

(5) \begin{enumerate}
\item a. John intends for Bill to leave soon.
\item b. \textit{$\approx$} John intends to bring it about that Bill leave soon.
\end{enumerate}

200); Ninan (2005:16–17); Crnič (2011:83–84); Pearson (2016:734); and Condoravdi and Lauer (2016:23–27). See also Jackendoff 1996 and remarks by Jackendoff and Culicover (2003:537) for an approach to \textit{intend} couched in conceptual semantics. These works will be cited below as appropriate; some of Condoravdi and Lauer’s (2016) proposals in particular will play a rather important role in the analysis to be presented.
The authors cited above take this paraphrase relation to suggest that (5a) involves coercion (or something close to it: Perlmutter argues for a silent causative predicate). I will show that this paper’s central thesis, by contrast, enables a coercion-free analysis of such sentences, and I will discuss some of the issues that are at stake in deciding between a coercion-free and a coercion-based account. These issues include whether simple event reports like John broke the window are ambiguous between an intentional and a non-intentional reading as opposed to simply being underspecified for intention, as well as whether or not the responsibility component of intend is best understood as a selectional restriction on the kinds of complements intend can combine with. Given the subtlety and complexity of the issues involved I do not come to a firm conclusion on this question, but contribute to the discussion by bringing to bear some relevant issues that as far as I know have not previously been considered in this context.

The organization of the rest of this paper is as follows. Section 2 surveys the empirical landscape of intention reports, highlighting their similarities and differences with respect to belief and desire reports. Section 3 provides background on Condoravdi and Lauer’s (2016) proposal regarding effective preferences and shows how a treatment of intend as an effective preference predicate makes sense of a number of its key properties. Section 4 provides background on Farkas’s (1988) RESP-relation and shows how including it in the denotation for intend explains the rest of the key properties of intend. Section 5 discusses intention reports that do not involve syntactic control, laying out some issues that are at stake in deciding whether to adopt a coercion analysis of such sentences. Section 6 investigates a use of intend that seems not to involve responsibility in Farkas’s (1988) sense and discusses how this phenomenon might be accommodated within the general approach to intention reports taken in this paper. Section 7 compares this paper’s analysis of intention reports to two recent alternatives. Finally, section 8 concludes and offers some preliminary remarks on how this study of intention reports might scale up to a larger investigation of what kinds of attitude predicates are and are not found in natural language.

2 The empirical landscape

In this section, I lay out six key semantic properties of intention reports. The first four properties (realism, conjunction introduction, monotonicity, and non-gradability) all highlight ways in which intend behaves like believe and unlike want, while the next property (anankastic conditionals) show that in another way, intend behaves like want and unlike believe. Finally, the last property (responsibility) highlights a way in which intend behaves unlike both believe and want. Taken together, these
six properties will constitute the empirical foundation for the analysis of intention reports to be presented in sections 3–4 below.

Before we begin, a note on the scope of the investigation: I limit myself throughout this paper to the verb intend. But it bears noting that intend is closely related to at least three classes of verbs. First, there are verbs that, like intend, involve a kind of internal or private commitment to take action, such as those in (6a). Then there are those verbs that involve a kind of public or externally-directed commitment to take action, such as those in (6b). (See also Grano 2015, and the discussion thereof in section 7.1 below, for more on the relationship between private and public commitments.) Finally, there are those verbs that have to do with one agent bringing it about or trying to bring it about that another agent come to have an obligation and/or intention to act, as in (6c). Along with desire predicates like want, the predicates exemplified in (6a–c) constitute the core classes of predicates that typically instantiate syntactic control. Consequently, much of the previous work on these verbs is found within the control literature, especially the literature on controller choice: see especially Farkas 1988; Sag and Pollard 1991; Jackendoff and Culicover 2003; Rooryck 2008. (See also Sharvit 2003; Grano 2011 for formal semantic approaches to try and Condoravdi and Lauer 2011 on verbs like promise and order.)

(6) a. verbs of private commitment: aim, choose, decide, endeavor, intend, plan, try
   b. verbs of public commitment: agree, offer, pledge, promise, swear, threaten
   c. verbs of influence: advise, beg, command, order, persuade, urge

It is a very interesting question — and one that I hope will inspire future research — whether and to what extent these verbs pattern like intend with respect to the properties outlined in this section. But for reasons of space and tractability, it is not a question that I will have anything more to say about in this paper.

2.1 Realism

The first property of intention reports to be considered here is what I will call REALISM: ordinarily, an intention report comes along with the expectation that the attitude holder believes the named outcome to be within the realm of possibility. This is evidenced by examples like those in (7), which at worst sound contradictory and at best portray John as being irrational.

(7) a. #John intends to fly to the moon, even though he knows this is impossible.
b. #John intends to turn into a unicorn, even though he knows this is impossible.

Desire reports make for a useful comparison here. Heim (1992) proposed that desire reports also carry such a presupposition. But as Heim herself observed, this proposal is challenged by examples like (8), which seem perfectly felicitous.

(8) I want this weekend to last forever. (But I know, of course, that it will be over in a few hours.) (Heim 1992:199)

Consistent with this observation, there is a fairly clear contrast between (7) and the minimal variants in (9) that substitute in want in place of intend. The examples in (9) are perhaps a bit awkward, especially when judged in comparison with the explicitly counterfactual and impeccably felicitous formulations in (10). But they still do not descend to the level of infelicity associated with (7).\(^5\)

(9) a. John wants to fly to the moon, even though he knows this is impossible.
   b. John wants to turn into a unicorn, even though he knows this is impossible.

(10) a. John wishes he could fly to the moon, even though he knows this is impossible.
    b. John wishes he could turn into a unicorn, even though he knows this is impossible.

2.2 Conjunction Introduction

A second property of intention reports, noted by Condoravdi and Lauer (2016), is that they validate CONJUNCTION INTRODUCTION: if \(a\) intends \(p\) and \(a\) intends \(q\), then we would ordinarily expect that if \(a\) is rational, \(a\) should also (at least upon reflection) intend \(p \land q\).

This property is detectable in two ways. First, suppose \(p\) and \(q\) contradict each other. Then, if \(a\) intends \(p\) and \(a\) intends \(q\), and intention reports obey conjunction introduction, we can conclude that \(a\) intends \(p \land q\). But then, given the realism property of intention reports discussed in section 2.1 above, this should mean that \(a\) believes (irrationally) that a logical contradiction is possible. Consistent with this expectation, we find that conjoined intention reports of the form \(a\) intends \(p\) and \(a\)

\(^5\)One might wonder: is it strong enough to say that an intention report merely requires that the attitude holder believe in the possibility of the outcome, as opposed to belief that the outcome will certainly come about? (Cf. in this connection the discussion in Heim 1992:199.) See section 7.2 below, where I revisit this question in the context of assessing Pearson’s (2016) proposal to analyze intention reports as a particular kind of belief report.
intends q do indeed sound odd — or at the very least portray a as irrational — when p and q contradict each other ((11b) is taken from Condoravdi and Lauer 2016:25):

(11)  a. #John intends to stay at home tonight, but he also intends to go out tonight.
    b. #John intends to move in with his girlfriend, but he also intends to keep living alone.

The second way in which conjunction introduction manifests itself is in cases where p and q do not contradict each other, but where a intends p and a intends q is paired with a denial of a intends p \land q. As expected, doing so has an odd result ((12) is adapted from Condoravdi and Lauer 2016:26–27, building on a similar example due to Levinson 2003):

(12)  #John intends to visit Paris this summer. And John intends to visit Rome this summer. But he doesn’t intend to visit both Paris and Rome this summer.

Consider, by contrast, want. As observed by Levinson (2003) and further discussed by Condoravdi and Lauer (2016), want does not always validate conjunction introduction. Substituting in want for intend in the above examples results in perfectly felicitous sentences. In (13), John is not portrayed as being irrational but rather simply has desires pulling him in conflicting directions. Similarly, as Condoravdi and Lauer (2016) note, (14) is felicitous in a scenario where (for example) John independently considers both Paris and Rome desirable travel destinations but prefers not to expend the time or money that would be needed to visit both places.

(13)  a. John wants to stay at home tonight, but he also wants to go out tonight.
    b. John wants to move in with his girlfriend, but he also wants to keep living alone.

(14)  John wants to visit Paris this summer. And John wants to visit Rome this summer. But he doesn’t want to visit both Paris and Rome this summer.

Finally, to round out the picture, we observe that believe patterns together with intend to the exclusion of want in validating conjunction introduction. The sentences in (15)–(16) are at worst contradictory and at best portray John as being irrational.

(15)  a. #John believes he’ll stay at home tonight, but he also believes he’ll go out tonight.
    b. #John believes he’ll move in with his girlfriend, but he also believes he’ll keep living alone.
(16) #John believes he’ll visit Paris this summer. And John also believes he’ll visit Rome this summer. But he doesn’t believe he’ll visit both Paris and Rome this summer.

2.3 Monotonicity

The third property of intention reports to be considered is (UPWARD) MONOTONICITY: if \(a\) intends \(p\), then we would ordinarily expect that if \(a\) is rational, \(a\) should also, at least upon reflection, intend logical consequences of \(p\). Consistent with this expectation, we see in examples like (17) that if \(p\) entails \(q\) and we pair a denial of \(a\) intends \(q\) with an assertion of \(a\) intends \(p\), the result is at worst contradictory and at best portrays \(a\) as being irrational. ((17a) and (17b) are fashioned after Heim 1992 and Anand and Hacquard 2013, respectively, based on example sentences that these authors construct to probe the monotonicity of \textit{want}.)

(17) a. #John doesn’t intend to teach next semester, but he intends to teach Tuesdays and Thursdays next semester.
   b. #John doesn’t intend to die, but he intends to die quickly.
   c. #John doesn’t intend to use his voice, but he intends to sing.

Again, a comparison to \textit{want} is instructive. It is a matter of some controversy whether \(a\) \textit{wants} \(p\) is upward-monotonic on \(p\). See, among others, Stalnaker 1984; Asher 1987; Heim 1992; Giannakidou 1999; von Fintel 1999; Levinson 2003; Villalta 2008; Crnić 2011; Anand and Hacquard 2013; Condoravdi and Lauer 2016. At this stage, I do not want to take a stance on this controversy, but rather wish to use some facts that bear on the controversy to illustrate the contrast between \textit{intend} and \textit{want}. As we see in (18), when we substitute in \textit{want} for \textit{intend} in the examples above, the sentences become perfectly felicitous: they are neither contradictory nor do they portray John as being irrational.

(18) a. John doesn’t want to teach next semester, (but given that he has to,) he wants to teach Tuesdays and Thursdays next semester.
   b. John doesn’t want to die, (but given that he has to,) he wants to die quickly.
   c. John doesn’t want to use his voice, (but given that he has to,) he wants to sing.

In the examples in (18), I infix \ldots \textit{but given that he has to} \ldots between the relevant pieces because this helps reinforce the felicity of such sentences, a fact which is no doubt an important clue into how these sentences work. Crucially, this infixation produces no comparable improvement in the felicity of intention reports:
(19)  
a. #John doesn’t intend to teach next semester, (but given that he has to,) he intends to teach Tuesdays and Thursdays next semester.
b. #John doesn’t intend to die, (but given that he has to,) he intends to die quickly.
c. #John doesn’t intend to use his voice, (but given that he has to,) he intends to sing.

Finally, to round out the picture, we note that believe again here patterns like intend and unlike want in that it displays upward monotonicity:

(20)  
a. #John doesn’t believe he’ll teach next semester, but (given that he has to,) he believes he’ll teach Tuesdays and Thursdays next semester.
b. #John doesn’t believe he’ll die, but (given that he has to,) he believes he’ll die quickly.
c. #John doesn’t believe he’ll use his voice, but (given that he has to,) he wants to sing.

2.4 Non-gradability

As discussed by Villalta (2008); Lassiter (2011); Anand and Hacquard (2013), want displays properties characteristic of gradable predicates, such as being able to occur in comparatives (21a) and superlatives (21b) and with degree adverbs (21c). As pointed out by Crnič (2011:83, note 22), however, when we turn to intend, we find that it does not display such properties, as seen in (22). In this respect, intend behaves like believe, which is also uncomfortable in gradable environments, as shown in (23).

(21)  
a. John wants to go to Paris more than he wants to go to London.
b. What John wants the most is to be happy.
c. John wants very much to leave.

(22)  
a. ?John intends to go to Paris more than he intends to go to London.
b. ?What John intends the most is to be happy.
c. ?John intends very much to leave.

(23)  
a. ?John believes he’ll go to Paris more than he believes he’ll go to London.
b. ?What John believes the most is that he’ll be happy.
c. ?John believes very much that he’ll leave.

I also note in passing one other phenomenon that has intend and believe patterning together to the exclusion of want. As observed by Crnič (2011) and il-
Illustrated in (24) (based on Crnič 2011:81), want licenses what Crnič calls “weak even” in its complement, where even is “weak” in Crnič’s sense just in case the minimal clause containing it “denotes a proposition that is most likely (least noteworthy) among its alternatives” (Crnič 2011:11). By contrast, intend and believe do not license weak even.

(24) a. Mary wants to find even ONE party that cares for the people.
   b. #Mary intends to find even ONE party that cares for the people.
   c. #Mary believes she’ll find even ONE party that cares for the people.

While a full investigation of weak even would take us too far afield, what Crnič (2011) suggests in a nutshell is that the asymmetry in (24) has to do with the fact that want has a semantics that involves comparison over alternatives in a way that intend and believe do not. If this is right, then this is yet another manifestation of the non-gradability of intend.

2.5 Anankastic conditionals

We now turn to a way in which intend patterns like want and unlike believe, namely, how these predicates behave with respect to anankastic conditionals. Anankastic conditionals were first brought to the attention of linguists by Sæbø (1985, 2001) and have since been investigated by many formal semanticists such as von Fintel and Iatridou (2005); Huitink (2005, 2008); Nissenbaum (2005); von Stechow, Krasikova, and Penka (2006); Condoravdi and Lauer (2016). Informally speaking, an anankastic conditional is a sentence of the general form in (25) that expresses a necessary condition $q$ for achieving a specified goal or desire $p$.


For example, a salient interpretation of (26a) is as indicated by the paraphrase in (26b). This is the anankastic interpretation.

(26) a. If you want to get good grades, you must study.
   b. $\approx$ You must study in order to get good grades.

Notably, not all conditionals that match the pattern in (25) are ordinarily read as anankastic conditionals. For example, the most natural interpretation of (27a) is NOT one that can be paraphrased by (27b).

(27) a. If you want to get bad grades, you must reexamine your priorities.
   b. $\not\approx$ You must reexamine your priorities in order to get bad grades.
What matters at this stage is not the full range of issues raised by these sentences but rather just the observation due to Sæbø that the embedding predicate in the antecedent of an anankastic conditional need not be \textit{want} but can also be a verb like \textit{intend, hope, plan,} or \textit{aim.} Sæbø suggests that what these predicates share is that they name an “intentional attitude”. Consistent with this generalization is the observation that \textit{intend} indeed patterns like \textit{want} in supporting anankastic construals in example like (26) and (28) respectively, whereas \textit{believe} as used in (29) does not.

\begin{itemize}
  \item[(28)]
    \begin{enumerate}
      \item If you intend to get good grades, you must study.
      \item You must study in order to get good grades.
    \end{enumerate}
  \end{itemize}

\begin{itemize}
  \item[(29)]
    \begin{enumerate}
      \item If you believe you’ll get good grades, you must study.
      \item You must study in order to get good grades.
    \end{enumerate}
  \end{itemize}

So, unlike the first four properties we considered, wherein \textit{intend} patterns like \textit{believe} and unlike \textit{want}, here we see a property shared by \textit{intend} and \textit{want} to the exclusion of \textit{believe}.\footnote{Another way in which \textit{intend} patterns like \textit{want} and unlike \textit{believe} is with respect to mood choice. In Greek, for example, skopevo ‘plan’/‘intend’ patterns like thelo ‘want’ and unlike pistevo ‘believe’ in combining with a complement that contains the subjunctive mood marker na rather than the indicative complementizer oti (see e.g. Spyropoulos 2008; Giannakidou 2013).}

The analytical implications of this fact are unclear, partly because there are a number of approaches to mood choice on the market. According to Villalta (2008), subjunctive mood signals that the embedding predicate is gradable. This approach would seem to stand at odds with the observation from section 2.4 that \textit{intend} is non-gradable. But Villalta herself points out that directive predicates like Spanish mandar ‘order’ and causative predicates like Spanish hacer ‘make’ select for subjunctive complements even though these predicates do not pass standard tests for gradability. Villalta consequently suggests that for these predicates, “the comparative meaning component is embedded more deeply within the meaning of the predicate” (Villalta 2008:484). A similar approach could be entertained for \textit{intend}: anticipating the proposal in section 3.2, it is gradable in the sense that it is built on preference structures, which encode an ordering relation, but because non-maximally ranked preferences are ignored, the gradability does not manifest itself in the ordinary ways.

By contrast, according to Giannakidou’s (2009) theory of mood choice, indicative mood signals veridicality, i.e., that the attitude holder “is committed to the truth of the complement sentence” (Giannakidou 2009:1887). This is consistent with the position in this paper that an intention report of the form \textit{a intends p} does not entail that \textit{a} is committed to the truth of \textit{p} but rather comes only with the weaker realism constraint that \textit{a} believes \textit{p} to be within the realm of possibility (see also section 7.2).

In summary, then, the fact that ‘intend’ selects for subjunctive complements may constitute independent evidence that \textit{intend} has comparative semantics built into it at some level (if we follow Villalta) or it may constitute independent evidence that \textit{intend} is not veridical (if we follow Giannakidou).
2.6 Responsibility

In this final subsection of our empirical overview, I document a number of phenomena whereby intend patterns one way and believe and want pattern another way. In anticipation of the analysis to be presented later, let me say right at the outset that I believe all of these phenomena have the same underlying source. And the facts to be presented are perhaps more easily digested if they are considered with this underlying source in mind. So, let me now attempt to preview the analysis in a semi-formal way: in calculating the truth conditions of an intention report of the form \( a \text{ intends } p \), we consider only that subset of \( p \)-worlds in which \( a \) intentionally brings it about that \( p \). Other \( p \)-worlds are ignored. By contrast, in calculating the truth conditions of a belief or desire report of the form \( a \text{ believes/} \text{wants} \ p \), we consider all \( p \)-worlds. I borrow Farkas’s (1988) term responsibility to pick out this property of intention reports. All of the facts to be presented in this subsection can be read as trying to substantiate this core idea.

2.6.1 The causation effect

It has been observed before both in the linguistics literature (Perlmutter 1968; Jackendoff 1996; Jackendoff and Culicover 2003; Culicover and Jackendoff 2005; Grano 2015) and in the philosophy literature (Brand 1984; Ludwig 2007) that when intend combines with a complement that is not syntactically controlled, as in (30a), the resulting sentence is intuitively paraphrasable as a minimally different sentence in which the complement to intend is embedded under a causative predicate controlled by the attitude holder, as in (30b).

(30) a. John intends (for) Bill to leave.
   b. \( \approx \) John intends to bring it about that Bill leave.

Notably, no such paraphrase relation holds for belief or desire reports: (31a) cannot be sensibly paraphrased as (31b) nor can (32a) be sensibly paraphrased as (32b) (a point made by Jackendoff 1996). I will call this special property of intention reports the causation effect.

(31) a. John believes Bill will leave.
   b. \( \not \approx \) John believes he\(_1\)’ll bring it about that Bill leave.

(32) a. John wants Bill to leave.
   b. \( \not \approx \) John wants to bring it about that Bill leave.

   To be sure, the robustness of the causation effect has been called into question both by linguists (Boeckx, Hornstein, and Nunes 2010) and by at least one
philosopher (Vermazen 1993). And I want to respond to the challenge these authors bring up. But it will be easier to do so after the core theory of intention reports has been introduced, so I delay a discussion of potential counterexamples to the causation effect until section 6 below.

2.6.2 Interaction with (un)intentionally

A second way in which intend parts company from believe and want has to do with the effect of inserting the adverbs unintentionally and intentionally into the complement of the attitude verb. Turning first to unintentionally, the observation is that with believe, such an insertion is felicitous (as long as the predicate names an action that can in principle be undertaken unintentionally) as in (33a). Similarly for want: (33b) reports a coherent albeit somewhat unusual desire. (33c), by contrast, requires much more work to make sense of and when decontextualized sounds quite odd. (Though see section 4.2 below for a suggestion about a context that might make (33c) true.)

(33) a. John believes he’ll break the window unintentionally.
    b. John wants to break the window unintentionally.
    c. #John intends to break the window unintentionally.

An analogous effect is witnessed with intentionally. With a belief or desire report, the insertion of intentionally into the complement of the attitude verb is a coherent and informative addition to the content of the attitude being expressed, as seen in (34a–b). By contrast, (34c) sounds redundant.

(34) a. John believes he’ll break the window intentionally.
    b. John wants to break the window intentionally.
    c. #John intends to break the window intentionally.

2.6.3 Uncontrollable outcomes

The next effect to be considered has to do with what happens when we embed under the attitude verb a predicate that names an outcome which is ordinarily not under the control of the individual named by the subject. The observation is that in the case of intend, something special has to happen in order for the resulting sentences to be felicitous. Consider for example the sentences in (35), which are awkward insofar as they require that John believe that it is within the realm of possibility that he has control over the named outcomes (cf. also Heim 1992:199–200; Jackendoff 1996; Jackendoff and Culicover 2003:542 for relevant discussion).

(35) a. #John intends to go through puberty next year.
b. #John intends to snore while he is asleep tonight.
c. #John intends to resemble his father.
d. #John intends to be tall.

Witness in this connection the corresponding infelicity of the variants in (36), which provide additional linguistic support for the idea that the embedded predicates in (35) name outcomes that cannot ordinarily be construed as being brought about intentionally by the individual named by the subject. If anything, the sentences in (36) are even more infelicitous than those in (35), because instead of just requiring us to entertain the idea that John thinks he might be able to have control over the outcome, these sentences are used to assert that John actually did have control over the outcome.

(36) a. #John intentionally went through puberty last year.
b. #John intentionally snored while he was asleep last night.
c. #John intentionally resembled his father.
d. #John was intentionally tall.

By contrast, when we turn to want and believe, there is no corresponding infelicity, as seen in (37)–(38). To make sense of (37)–(38), we need not think that John believes himself to have control over the named outcomes.

(37) a. John wants to go through puberty next year.
b. John wants to snore while he is asleep tonight.
c. John wants to resemble his father.
d. John wants to be tall.

(38) a. John believes he’ll go through puberty next year.
b. John believes he’ll snore while he is asleep tonight.
c. John believes he’ll resemble his father.
d. John believes he’ll be tall.

2.6.4 Conditions of satisfaction

Finally, yet a fourth way of approaching the special nature of intend comes from the work of Searle (1983). For Searle, attitudes have conditions of satisfaction: a belief is either true or false, a desire is either fulfilled or unfulfilled, and an intention is either carried out or not carried out. What determines, for a given attitude, its conditions of satisfaction? According to Searle, this is rather transparent in the case of belief and desire: a belief that $p$ is satisfied iff $p$ is true and a desire that $p$ is satisfied
iff $p$ is true.\textsuperscript{7} But crucially, according to Searle, the conditions of satisfaction for intention are more complicated. For an intention that $p$ to be satisfied, it must be the case not only that $p$ is true but more specifically that $p$ is true in virtue of standing in an appropriate causal relation with the very intention it represents.\textsuperscript{8}

For example, suppose John intends to break the window. Before he has a chance to carry out his intention, he is outside throwing a ball around. He accidentally throws the ball at the window and breaks it. Our linguistic intuition tells us that in this scenario, it is not the case that John broke the window intentionally. So this shows us that it is possible for someone to intend to do something and to do it, but not intentionally. And according to Searle, it is false in this scenario to say that John’s intention was satisfied, because the intention was not an antecedent in an appropriate kind of causal chain to the outcome of breaking the window. To the extent that it is possible to have intuitions about conditions of satisfaction, this seems right. By contrast, if John wants to break the window or believes he’ll break the window, then his breaking the window satisfies the attitude regardless of how his breaking the window comes about (though see note 7).

3 Analysis part 1: intend as an effective preference predicate

3.1 Background on Condoravdi and Lauer 2016

Building on Davis (1984) and Levinson (2003), Condoravdi and Lauer (2016) develop a semantics for want that takes as its starting point the view that want has two kinds of readings, which Condoravdi and Lauer illustrate using the examples in (39a–b) respectively. Of interest is the fact that (39a) and (39b) are both truthful and appropriate answers in the same situation, despite the fact that they seem to contradict each other.

(39) Do you want to play tennis?
   a. I want to, but I have to teach.
   b. No [= I don’t want to], I have to teach.

Following Levinson (2003), Condoravdi and Lauer suggest that whereas the reading of want in (39a) simply reports a desire “as a matter of psychological fact”
(Condoravdi and Lauer 2016:22), the reading of want in (39b) reports “the kind of desire accompanying intentional action” (Levinson 2003:223). Fleshing out this distinction, Condoravdi and Lauer (2016:22–23) write as follows:

For an agent who has to decide between alternative courses of action, the decision is driven by two factors. On the one hand, he has certain beliefs, including beliefs about which actions are available, and what their consequences are. On the other hand, he has certain preferences for how the world turns out to be, relative to outcomes over which he might have some influence. But not all desires or preferences that the agent has as a matter of psychological fact need to count among the preferences that guide action choice. He might simply fail to take some of his desires into account, or a more important preference might defeat a less important one. We call the preferences that the agent takes into account when choosing actions his effective preferences.

To model effective preferences, Condoravdi and Lauer draw on their earlier work (Condoravdi and Lauer 2011, 2012) to propose that, at any given world, an agent has a set of PREFERENCE STRUCTURES corresponding to “the various sources of his preferences” (Condoravdi and Lauer 2016:28), such as “desires, inclinations, personal moral codes, and obligations” (Condoravdi and Lauer 2012:45). As defined in (40), a preference structure is a pair \( \langle P, \prec \rangle \), where \( P \) is a set of propositions (a set of sets of possible worlds) and \( \prec \) is a strict partial order on \( P \).

\[
\text{(40) Given a set of worlds } W, \text{ a preference structure is a pair } \langle P, \prec \rangle, \text{ where } P \subseteq \mathcal{P}(W) \text{ and } \prec \text{ is a strict partial order on } P.
\]

(Condoravdi and Lauer 2016:29)

Condoravdi and Lauer propose that among an agent’s preference structures is his effective preference structure, which serves to “integrate his various preferences into an over-arching set of preferences that can guide action” (p. 29). They furthermore propose that an agent’s effective preference structure is subject to at least two special requirements. The first is consistency, as defined in (41): if any of the propositions in the preference structure are inconsistent with each other relative to the agent’s beliefs, then these propositions must be asymmetrically ranked. The intuitive basis for this requirement is that if an agent has two or more preferences that cannot all be realized together given what the agent believes about the world, then it would be irrational for the agent to use all of these preferences to

\[
\text{9 Although Condoravdi and Lauer (2016) do not explicitly make this connection, their concept of effective preferences seems to be similar to Hansson’s (2001) concept of CHOICE-GUIDING PREFERENCES in his formal philosophical work on values and norms.}
\]
guide his actions; instead, the agent must rank the conflicting preferences so that the outranked ones do not guide action.

(41) **Consistency**

A preference structure \( \langle P, \prec \rangle \) is *consistent* with respect to an information state \( B \) if and only if for any \( X \subseteq P \), if \( B \cap \bigcap X = \emptyset \), there are \( p, q \in X \) such that \( p \prec q \).

(Condoravdi and Lauer 2016:29)

The second requirement that Condoravdi and Lauer propose for effective preference structures is realism, as defined in (42): each of the propositions in the preference structure must be compatible with the agent’s beliefs. The intuitive basis for this requirement is that it would be irrational for an agent to let his actions be guided by a preference that would be impossible to realize.

(42) **Realism**

A preference structure \( \langle P, \prec \rangle \) is *realistic*, relative to an information state \( B \), if and only if for all \( p \in P \): \( p \cap B \neq \emptyset \).

(Condoravdi and Lauer 2016:29)

Against this backdrop, Condoravdi and Lauer (2016) propose an underspecified semantics for *want* as in (43)–(44) whereby *want* is interpreted relative to a preference structure \( P \). Specifically, on this approach, \( a \) *wants* \( \phi \) denotes true relative to a world \( w \) and a preference structure \( P \) iff \( \llbracket \phi \rrbracket \) is a member of the highest ranked subset of \( P \) relative to \( a \) in \( w \).

(43) \( want_P(a, \phi) \) is true in \( w \) iff \( \llbracket \phi \rrbracket \in \max[P(a, w)] \)

(44) \( \max[P, \prec] := \{p \in P \mid \exists q \in P: p \prec q\} \)

(Condoravdi and Lauer 2016:30)

Thus, a sentence like *John wants to play tennis* might be true relative to one of John’s preference structure (because *John plays tennis* is among the most highly ranked propositions in that preference structure) but false relative to John’s effective preference structure (for example, it could be that consistency requires that *John plays tennis* be asymmetrically ordered with respect to *John teaches*, and the latter proposition wins out).

3.2 Back to intend

Condoravdi and Lauer (2016) acknowledge the close relationship between effective preferences and intentions, though they are explicit about not conflating the two. Instead, they suggest (p. 23):

One way to fit intentions into our set-up is to assume that they are a
particular kind of effective preference with special properties. Specifically, intentions could be those effective preferences that the agent has decided, for the time being, to maintain indefinitely into the future, until they are realized or consciously reconsidered. This would be close to the conception of intention that Bratman (1987) articulates.

They may well be right about this. But since we have to start somewhere, what I want to do in this section is adopt the working hypothesis that intend is just like want as analyzed by Condoravdi and Lauer except that it exclusively targets effective preferences. Then we can see how far this hypothesis goes toward accounting for the observations surrounding intend laid out in section 2 above.

Specifically, the hypothesis is that intend has the meaning indicated in (45), where Effective-Preference(a, w) is a’s effective preference structure at w and max is as defined in (44) above.

\[
[a \text{ intends } p]^w = 1 \text{ iff } p \in \max[\text{Effective-Preference}(a, w)] \quad (\text{to be revised})
\]

With this hypothesis in mind, we can now revisit each of the six properties of intend discussed in section 2 above.

3.2.1 Realism

The first property of intend we identified is that an intention report ordinarily comes along with the expectation that the attitude holder believes the named outcome to be within the realm of possibility, so that sentences like (46) sound odd.

(46) #John intends to fly to the moon, even though he knows this is impossible.

This property follows straightforwardly from the hypothesis that intend exclusively targets effective preferences, provided we follow Condoravdi and Lauer in imposing the realism requirement on effective preference structures. Realism, as defined in (42) above, is explicitly denied in (46), thereby accounting for its odd status.

3.2.2 Conjunction Introduction

The second property of intention reports we identified was conjunction introduction, as witnessed in two distinct ways. First, we saw that it is odd to coordinate two intention reports that involve mutually inconsistent outcomes, as in (47).

\[10\text{In this connection, Heim (1992) in fact suggests that “want has a reading more or less equivalent to intend . . . Probably this is not really an ambiguity but indicates a broader sort of vagueness” (p. 200).}\]
If *intend* is an effective preference predicate, then the oddity of examples like this is captured straightforwardly by Condoravdi and Lauer’s requirement that effective preferences obey the consistency property, as defined in (41) above. In particular, what goes wrong in (47) is that it asserts that *John stays home tonight* and *John goes out tonight* are both among John’s maximally ranked effective preferences. But if John’s belief worlds exclude the possibility of these two propositions both being true simultaneously, then by (41), they cannot be equally ranked. One must be demoted and thereby not count among John’s maximally ranked effective preferences (and thereby not be something that John intends).

The second way conjunction introduction manifests itself is in the observation that it is odd to follow a pair of intention reports with a denial that the attitude holder intends the conjunction of the two outcomes, as in (48).

As it happens, the analysis as presented so far does not account for the oddity of (48). Let *John visits Paris this summer* be $p$ and let *John visits Rome this summer* be $q$. Then (48) asserts that: $p$ is among John’s maximally ranked effective preferences, and $q$ is among John’s maximally ranked effective preferences, but $p \land q$ is not among John’s maximally ranked effective preferences. There is no violation of consistency here as defined in (41); i.e., there are no equally ranked, mutually inconsistent propositions in John’s effective preference structure.

Condoravdi and Lauer consider a possible way out of this shortcoming. In particular, they are concerned with the minimal variant of (48) in which *intend* is replaced by *want*. This is given in (49).

Condoravdi and Lauer suggest that the key to understanding examples like (49) is the existence of a third unstated preference on John’s part, namely the preference not to expend the resources needed to visit both Paris and Rome. Returning to the crucial example in (48), then, the suggestion would be that its oddity stems from the fact that (50a–c) are mutually inconsistent.

b. John visits Rome.
c. John does not expend the resources needed to visit both Paris and Rome.
But this does not actually solve the problem, because even on the assumption that in interpreting (48) we have to posit a third unstated preference like (50c), consistency would then merely require that these preferences not all be equally ranked. For example, consistency would be satisfied if (50a) and (50b) are both maximally ranked and (50c) has a lower ranking.

Consequently, we will need to revise our semantics. But before doing so, I want to turn to a parallel problem raised by monotonicity, because it will be convenient to consider the analytical implications of these two problems together.

### 3.2.3 Monotonicity

The next property of intention reports to revisit is (upward) monotonicity, as witnessed by the oddity of examples like (51).

(51) #John doesn’t intend to teach next semester, but he intends to teach Tuesdays and Thursdays next semester.

As it stands, the hypothesized semantics for *intend* does not predict the infelicity of these kinds of examples. It does not follow from anything presented so far that if \( p \) entails \( q \) and \( p \) is a maximally ranked effective preference, \( q \) is a maximally ranked effective preference as well.

There are at least two tacks we could take toward addressing the problem of monotonicity, taken together with the problem of conjunction introduction described in the previous subsection. On the first tack, we cleave as closely as possible to our Condoravdi and Lauer 2016-based semantics for intention reports by maintaining the approach in (52) (repeated from (45) above), and we impose two additional requirements on effective preference structures, namely those indicated in (53) and (54).

(52) \([a \text{ intends } p]^w = 1 \text { iff } p \in \max[\text{Effective-Preference}(a,w)]] \) (to be revised)

(53) **Closure under conjunction**
A preference structure \( \langle P, \prec \rangle \) is **closed under conjunction** iff for all \( p, q \), if \( p \in \max[\langle P, \prec \rangle] \) and \( q \in \max[\langle P, \prec \rangle] \), then \( p \land q \in \max[\langle P, \prec \rangle] \)

(54) **Closure under entailment**
A preference structure \( \langle P, \prec \rangle \) is **closed under entailment** iff for all \( p, q \), if \( p \in \max[\langle P, \prec \rangle] \) and \( p \rightarrow q \), then \( q \in \max[\langle P, \prec \rangle] \)

By (53), if *John visits Paris* and *John visits Rome* are both among John’s maximally ranked effective preferences, then so is *John visits Paris and John visits Rome*. We thereby guarantee the conjunction introduction property of intention re-
ports.  Similarly, by (54), if John teaches Tuesdays and Thursdays next semester is among John’s maximally ranked effective preferences, then so is John teaches next semester.

The second tack we could take to solve the problems of conjunction introduction and monotonicity would be to depart from our Condoravdi and Lauer 2016-based semantics for intention reports and instead move toward a Hintikka 1969-based setup (cf. also Condoravdi and Lauer (2016:21), who entertain but do not ultimately adopt a Hintikkan variant of their semantics for want). More specifically, we can preserve the Condoravdi and Lauer 2016-based idea that intention reports target maximally ranked effective preferences, but the manner in which they do this will be a bit more indirect: the set of propositions (i.e., the set of sets of possible words) that constitutes the agent’s maximally ranked effective preferences will need to be intersected with each other so as to yield one set of possible worlds, which we will represent as \( \bigcap \max \{\text{Effective-Preference}(a, w)\} \). This can then be plugged into a standard Hintikkan set-up for attitude reports, as in (55).

\[
\text{(55) A Hintikkan approach to intention reports:} \\
[ a \intends p ]^w = 1 \text{ iff } \forall w' [ w' \in \bigcap \max \{\text{Effective-Preference}(a, w)\} \rightarrow p(w') ]
\]

In moving from Condoravdi and Lauer’s ‘proposition membership’ approach to Hintikka’s ‘universal quantification over possible worlds’ approach, we derive both conjunction introduction and monotonicity as automatic consequences. Since the content of the intention is mapped onto the scope of a universal quantifier, conjunction introduction is guaranteed in virtue of the same logic that guarantees that All dogs are mammals and All dogs are quadrupeds together entail All dogs are quadruped mammals (set-theoretically, for any sets A, B, and C, if A \( \subseteq \) B and A \( \subseteq \) C, then A \( \subseteq \) (B \( \cap \) C)). And monotonicity is guaranteed in virtue of the same logic that guarantees that All dogs are mammals and All mammals are animals together

\[11\] It also bears noting that once we adopt (53), it is not clear that we need consistency (as defined in (41) above) as an independent constraint on effective preference structures. Consider again the example involving mutually inconsistent outcomes, repeated here in (i).

(i) #John intends to stay home tonight, but he also intends to go out tonight.

(53) requires that if (i) is true, then among John’s maximally ranked effective preferences is the proposition that John stays home tonight and John goes out tonight. But since this is a contradiction, it runs afoul of the realism requirement. So at least as far as this particular kind of example goes, consistency is superfluous as an independent constraint. Since closure under conjunction as defined in (53) only targets maximally ranked effective preferences, one thing consistency does that closure under conjunction does not do is ensure that there are no inconsistencies even among equally but non-maximally ranked preferences. But unless we can identify natural language expressions that target non-maximally ranked effective preferences, it is not clear how we would test whether this is needed.
entail *All dogs are animals* (set-theoretically, this is just the transitive property of the subset relation).

None of the rest of the material in this paper will hinge crucially on the choice between these two tacks, and so I will not insist forcefully on choosing one or the other. But I will for concreteness adopt the former approach whereby we preserve the Condoravdi and Lauer 2016-based semantics and derive the relevant properties by imposing constraints on effective preference structures. And so a few words are in order on how this decision might be justified. At first blush, the Hintikkan approach would seem to be the more attractive one, since it derives conjunction introduction and monotonicity as logical consequences of the way it treats the content of the intention report rather than having to stipulate these properties. This seems much more explanatorily satisfying. But the suggestion I would like to make is that perhaps this explanatory depth is a vice rather than a virtue. In particular, it is not clear to me that (56) and (57) are odd in the same way. Whereas (56a–b) are logical contradictions, (57a–b) seem more like potentially truthful reports on the mental state of an irrational agent.

(56) a. #All dogs are mammals. And all dogs are quadrupeds. But not all dogs are quadruped mammals.
   b. #All dogs are quadruped mammals, but not all dogs are mammals.

(57) a. #John intends to visit Paris this summer. And John intends to visit Rome this summer. But he doesn’t intend to visit both Paris and Rome this summer.
   b. #John intends to teach Tuesdays and Thursdays next semester, but he doesn’t intend to teach next semester.

Whereas the Hintikkan approach threatens to collapse this distinction, the Condoravdi and Lauer 2016-based approach allows us to treat (57) as potentially truthful reports of an agent who is (irrationally) suspending one or more of the constraints on effective preference structures that we ordinarily associate with rational agents. And of course these constraints are not arbitrary: realism, closure under conjunction, and closure under entailment all help ensure that an agent is committed to a realistic, consistent, and non-contradictory plan of action. But since agents are not always rational, it is not clear that we want our semantics to make contradictions out of what could actually be truthful reports of irrational mental states.\(^{12}\)

\(^{12}\)In fact, the same charge can be leveled against the Hintikkan approach to belief reports, though it will be beyond the scope of this paper to explore this in any detail. But see Stalnaker’s (1991) paper on the “problem of logical omniscience” and concomitant discussion of the “sentence storage model of belief”, whereby one’s beliefs are modeled as a set of sentences (the “belief box”) whose content may or may not have some constraints imposed on them. This is exactly parallel to Condoravdi and
While this is far from an exhaustive discussion and there are a number of subtle issues at play, I hope to have at least made the case that the Condoravdi and Lauer 2016-based approach is a viable and potentially desirable one.\(^{13}\)

### 3.2.4 Non-gradability

The next property of intention reports to be dealt with is their non-gradability, as evidenced by the oddness of examples like (58).

(58) a. ?John intends to go to Paris more than he intends to go to London.
    b. ?What John intends the most is to be happy.
    c. ?John intends very much to leave.

This non-gradability follows straightforwardly from the analysis of \textit{intend} under consideration, repeated in (59). The reason is that although effective preference structures, like all preference structures, come with an ordering, the semantics for \textit{intend} in (59) is defined in such a way that only \textit{maximally ranked} effective preferences are considered. By definition, maximally ranked preferences are not asymmetrically ranked with respect to each other, and so there is nothing on which to hang gradability.

(59) \[ [a \text{ intends } p]^w = 1 \text{ iff } p \in \text{max}[\text{Effective-Preference}(a,w)] \]  
\textit{(to be revised)}

In fact, what is of more interest is the observation that \textit{want}, unlike \textit{intend}, is gradable, as we’ve already seen in examples like those repeated in (60). If \textit{want} is like \textit{intend} in exclusively targeting \textit{maximally ranked} preferences, it is not obvious how examples like these could be accommodated.

(60) a. John wants to go to Paris more than he wants to go to London.

Lauer’s (2016) ‘proposition membership’ approach to \textit{want} and by extension this paper’s approach to \textit{intend}. It is also parallel to what Halpern and Pucella (2011) call the “syntactic approach” to the problem of logical omniscience.

\(^{13}\)A second potential argument in favor of the Condoravdi and Lauer 2016-based approach is that it seems more in keeping with the Davis 1984/Levinson 2003-inspired intuition discussed in section 3.1 above that intending is a special kind of wanting. The Condoravdi and Lauer 2016-based approach carries out this intuition in a rather natural way by treating \textit{want} as being associated with an underspecified preference structure and \textit{intend} as similar except for exclusively targeting effective preferences, which come along with their concomitant special requirements. (Granted, another intuition found in the literature is that intending is a special kind of believing, but I will argue in section 7.2 below that such an approach is misguided.) But ultimately I think this argument is less compelling, because as we proceed, we will see that \textit{intend} and \textit{want} must be further differentiated in virtue of their asymmetric behavior with respect to gradability and responsibility, thereby compelling us to weaken their analytical connection anyway.

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\(^{24}\)
b. What John wants the most is to be happy.
c. John wants very much to leave.

Since this paper’s focus is intend rather than want, a full investigation of this issue would take us too far afield. But a few remarks will help clarify how want and intend differ and thereby contribute to a better understanding of intend. To a first approximation, what seems to be needed for (60a), to take one example, is a semantics whereby John has some (contextually resolved) preference structure, according to which the proposition John goes to Paris is more highly ranked than John goes to London. In other words, the sentence tells us something about the ranking of the two preferences with respect to each other without saying anything about their absolute standing in the preference structure. Consistent with such an analysis, it is noteworthy that (61a) can be true even in a situation where (61b) is false, analogous to the observation that (62a) does not entail (62b).

(61) a. John wants to go to Paris more than he wants to go to London.
   b. $\neg$ John wants to go to Paris.

(62) a. John is taller than Bill.
   b. $\neg$ John is tall.

According to an influential approach to the semantics of gradable predicates (see e.g. Kennedy 2007), the so-called positive form of a gradable predicate such as tall as used in (62b) incorporates a silent morpheme (the so-called pos morpheme) that interacts with the rest of the material in the sentence to yield truth conditions to the effect that John stands out along the dimension named by the gradable predicate relative to a threshold determined in part by the context. In (62a), by contrast, pos is absent, and instead, the comparative morpheme interacts with the other material to yield truth conditions to the effect that John’s height exceeds Bill’s height.

A reasonable null hypothesis then is that (61a–b) is analytically parallel to (62a–b): in the semantics for (61b), there is a silent pos morpheme inserted in the absence of overt degree expressions such as the comparative morpheme in (61a). Such an analysis moves us away from the ‘maximality’ based semantics for want proposed by von Fintel (1999) (and later adopted by Condoravdi and Lauer (2016)) on analogy with the role that ordering sources play in a Kratzer-style modal seman-

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14More complicated are cases like (i), which require us to make a comparison across distinct preference structures (in this case, one of John’s preference structures and one of Bill’s preference structures). Such sentences seem to call for more than what we get for free with Condoravdi and Lauer’s ordering relation, which only applies within a given preference structure.

(i) John wants to go to Paris more than Bill wants to go to London.
tics, and instead moves us in the direction of approaches to *want* taken by authors such as Villalta (2008); Lassiter (2011); Rubinstein (2012); Anand and Hacquard (2013).

While these remarks only scratch the surface, the important point is that on the view suggested here, *want* and *intend* are both built on preference structures, but *intend* deals in maximally ranked preferences only and hence does not tolerate gradability, whereas *want* allows us to access non-maximal portions of the preference structures it invokes.

### 3.2.5 Anankastic conditionals

Now we return to the observation that *want* and *intend* support anankastic readings of conditionals in sentences like (63a) and (64a) respectively whereas *believe* as used in (65a) does not readily do so.

(63) a. If you want to get good grades, you must study.
    b. ≈ You must study in order to get good grades.

(64) a. If you intend to get good grades, you must study.
    b. ≈ You must study in order to get good grades.

(65) a. If you believe you’ll get good grades, you must study.
    b. ‡ You must study in order to get good grades.

Condoravdi and Lauer (2016) proposes that anankastic conditionals have a double-modal structure so that (63a) has an analysis like (66), wherein NEC is a covert necessity modal with an epistemic modal base $f^1$ (the speaker’s true beliefs) and a stereotypical ordering source $g^1$; $want_{EP}$ is effective-preference *want*; and MUST is the overt modal in the consequent of the conditional, where $f^2$ is a modal base that determines “the historical alternatives of a world at a relevant time $t$ at which the antecedent is true” (Condoravdi and Lauer 2016:42), and $g^2$ is a teleological ordering source constituted by the maximally ranked effective preferences of the relevant agent, in this case the addressee.

(66) a. NEC$_{f^1,g^1}$ [$want_{EP}(You, get good grades)$] [MUST$_{f^2,g^2}$ [You study]]
    b. ≈ “All the most typical worlds consistent with what the speaker knows in which the addressee has the goal of [getting good grades] are such that all their possible future continuations in which the addressee’s goals are eventually realized in an optimal way are such that the addressee [studies].” (Condoravdi and Lauer 2016:42)

The fact that *intend* supports anankastic conditionals therefore follows straightforwardly from Condoravdi and Lauer’s semantics for anankastic conditionals cou-
pled with the proposal that intend (exclusively) targets an agent’s effective preferences. The absence of an anankastic interpretation for (65a), in turn, follows from the fact that believe cannot be construed as naming an effective preference of the attitude holder and consequently cannot interact correctly with the teleological ordering source of the modal in the consequent so as to produce the anankastic interpretation.

While that is the basic idea, there are some additional nuances involved that warrant a brief digression — and I think this digression is ultimately worth the trouble not only to clarify some important issues that are at stake but also because it will ultimately result in a richer dataset and a more sophisticated typology of preference predicates. To begin with, an anonymous reviewer questions the view that anankastic readings arise only when the antecedent of the conditional names an effective preference. The reviewer offers the example in (67) and observes that here, the antecedent of the conditional does not explicitly name a preference, but a pragmatically enriched assumption that the addressee has a preference for his or her candidate to win feeds the teleological interpretation of the modal in the consequent.

(67) If you believe your candidate might lose, you have to go out and try to get your friends and family to vote for her.

In light of examples like this, it is important to clarify that the claim is not that the antecedent of the conditional has to explicitly name an effective preference in order for the modal in the consequent to be read teleologically; rather, the claim is that it is only when the antecedent of the conditional explicitly names an effective preference that the proposition expressed by the conditional can be verified solely on the basis of whether a means-end relationship holds between the prejacent of the modal in the consequent and the relevant goal, irrespective of any contextual factors. To illustrate, observe that in the hypothetical exchange in (68), B can felicitously challenge A’s assertion by denying the contextual assumptions needed to verify the conditional. By contrast, when A’s assertion is manipulated so that the antecedent of the conditional explicitly names an effective preference, as in (69), B cannot felicitously challenge in the same way; instead, B would have to challenge the assertion by questioning whether the right kind of means-end relationship really hold between getting friends and family to vote for the candidate and having the candidate win, as in (69c).

(68) a. A SAYS: If you believe your candidate might lose, you have to go out and try to get your friends and family to vote for her.
   b. B SAYS: That’s actually not true, because even {if/though} I believe my candidate might lose, {I in fact want her to lose / my desire not to bother my friends and family is stronger than my desire for her to
win}, so in fact I do not have to get my friends and family to vote for her.

(69)  
  a. A SAYS: If you intend for your candidate to win, you have to go out and try to get your friends and family to vote for her.
  b. B SAYS: #That’s actually not true, because even {if/though} I intend for my candidate to win, {I in fact want her to lose / my desire not to bother my friends and family is stronger than my desire for her to win}, so in fact I do not have to get my friends and family to vote for her.
  c. B SAYS: That’s actually not true: My family and friends are already planning to vote for her, so my talking to them would have no effect.

This contrast between (68) and (69) relates to the examples in (70) originally due to Brian Weatherson and later reported and discussed by von Fintel and Iatridou (2006); Condoravdi and Lauer (2016). Condoravdi and Lauer (2016) note that the sentences in (70) can get an anankastic construal only when special contextual factors are present: “Suppose we are in a context where it is presumed that a potential weak desire to go to Harlem will be acted upon (i.e., will become an effective preference). For example, suppose the addressee is on vacation in New York, has no plans for the day yet, and there are no other reasons (lack of funds, etc.) that would keep him from acting on a mere whim” (Condoravdi and Lauer 2016:56). In other words, although the embedding predicates in the antecedent name preferences (at least in (70a–c)), they are unlike want and intend in that they do not have explicit effective preference readings, and so an anankastic reading can arise only via contextual enrichment.

(70)  
  a. If you’d like to go to Harlem, you have to take the A train.
  b. If you’d care to go to Harlem, you have to take the A train.
  c. If you’re inclined to go to Harlem, you have to take the A train.
  d. If you’re thinking about going to Harlem, you have to take the A train.
  e. If you think you might (want to) go to Harlem, you have to take the A train.

If we combine Condoravdi and Lauer’s proposals with the proposals of this paper, we then end up with three classes of preference predicates that vary along how they relate to effective preferences:

(71)  
  a. Exclusively target non-effective preferences: would like, would care, be inclined, . . .
  b. Optionally target effective preferences: want, . . .
  c. Exclusively target effective preferences: intend, . . .
We then predict that the predicates in (71a) support anankastic conditionals only via contextual enrichment, as just discussed. And we also predict that \textit{want} but not \textit{intend} should be felicitous in conditionals that are not anankastic but that nonetheless have a deontic or teleological modal in their consequent. This is borne out in the contrast in (72)–(73). The examples in (73) sound odd, I suggest, because it is very hard not to read the antecedent as naming an effective preference and thereby interacting with the modal in the consequent so as to deliver the anankastic reading and imply a means-end relationship.

(72)  
\begin{enumerate}[a.]
  \item If you want to eat chocolate, you should try thinking about something else. (Condoravdi and Lauer 2016:2)
  \item If you want to get bad grades, you must reexamine your priorities.
\end{enumerate}

(73)  
\begin{enumerate}[a.]
  \item ?If you intend to eat chocolate, you should try thinking about something else.
  \item ?If you intend to get bad grades, you must reexamine your priorities.
\end{enumerate}

Finally, we now have enough background to consider the more sophisticated example in (74), offered by an anonymous reviewer as a reason for questioning the tight connection between effective preferences and anankastic conditionals. The complication here is that the consequent of the conditional embeds a disjunction, the first disjunct naturally supporting an anankastic reading and the second disjunct naturally supporting a non-anankastic reading of the sort we saw in (72).

(74)  
If you want your daughters to be Olympic gymnasts, you either have to devote 30 hours a week and thousands of dollars to training them or give up your own vicarious dreams.

While a full investigation of how disjunction interacts with conditionals would take us too far afield, a few words are in order on how (74) might be squared with approach to anankastic conditionals adopted here. On Condoravdi and Lauer’s analysis, if we treated \textit{want} in (74) as effective-preference \textit{want}, then the sentence should sound odd because giving up one’s vicarious dreams cannot be easily construed as a condition for achieving one’s goal of having one’s daughters become Olympic gymnasts. That this is the case is supported by the intuition that if we replace \textit{want} with \textit{intend} — which by hypothesis targets effective preferences exclusively — the resulting sentence (75) sounds odd in the same way that (73a–b) sound odd.

(75)  
?If you intend for your daughters to be Olympic gymnasts, you either have to devote 30 hours a week and thousands of dollars to training them or give up your own vicarious dreams.
What this suggests is that in (74), we are not dealing with effective preference want and instead, the teleological modal in the consequent is keyed to a contextually recoverable goal. In this case, that goal might be something like “have no unfulfilled desires”. Then, there are two ways of achieving this goal: fulfill the desire (the option named by the first disjunct) or abandon the desire (the option named by the second disjunct).

Based on these considerations I conclude that there is a tight connection between effective preferences and anankastic interpretations of conditionals, but one has to be careful in probing this connection because there are two routes to anankastic-like interpretations: having an effective preference in the antecedent triggered by want or intend (which give rise to assertions that cannot be challenged by questioning the goal), or having a contextually supplied or inferred goal triggered by something other than intend (which give rise to assertions that can be challenged by questioning the goal).

3.2.6 Responsibility

Finally, we return to the observation that in an intention report, the outcome is necessarily construed as being intentionally brought about by the attitude holder, as witnessed by the causation effect (76), the oddness of denying intentionality in the complement (77), the redundancy of asserting intentionality in the complement (78), and the oddness of complements that name outcomes ordinarily not under one’s control (79).

(76) a. John intends (for) Bill to leave.
    b. ≈ John intends to bring it about that Bill leave.
(77) #John intends to break the window unintentionally.
(78) #John intends to break the window intentionally.
(79) #John intends to resemble his father.

We have proposed that an intention report is used to describe an effective preference, i.e., a preference that guides action. It is tempting to think that such a proposal makes the effects witnessed here seem somewhat unsurprising: more specifically, it is tempting to think that if a preference is to guide action, then it is only natural that the realization of that preference would have to be something under the deliberate control of the attitude holder. But before deciding whether to give into this temptation (an issue we will ultimately revisit in section 8 below), I want to introduce some additional theory that will put the question into sharper focus.
4 Analysis part 2: intend and the RESP-relation

4.1 Background on Farkas 1988

Farkas (1988) argues that in order to understand certain natural language phenomena, we need to recognize the existence of a relation she calls RESPONSIBILITY. For Farkas, RESP is a two-place relation between an individual $i$ and a situation $s$ that holds true “just in case $s$ is the result of some act performed by $i$ with the intention of bringing $s$ about” (Farkas 1988:36).

As evidence for the RESP-relation, Farkas points to four phenomena wherein a verb phrase or clause is felicitous only if the situation it describes can be construed as being intentionally brought about by some individual. The first phenomenon is rationale clauses. As seen in (80a–b), rationale clauses are felicitous in combination with event or state descriptions that can be construed as being intentionally brought about, such as John reading a book or a shopwindow having a sale sign in it. By contrast, as seen in (80c–d), rationale clauses are infelicitous in the context of situations not ordinarily under one’s control such as a son resembling his father or the weather being good lately.

(80)  

a. John read ‘Anna Karenina’ in order to impress Mary.
b. The shopwindow has a big sale sign in it in order to attract customers.
c. #John resembles his father in order to annoy his grandmother.
d. #The weather has been good lately in order to please the tourists.

(Farkas 1988:36)

The second phenomenon is imperatives. Based on the data in (81), Farkas suggests that imperatives are felicitous only when the situations they describe can be construed as standing in the RESP-relation with the addressee.

(81)  

a. Be polite!
b. #Be tall!
c. #Resemble your father!

d. #The weather has been good lately in order to please the tourists.

(Farkas 1988:39)

The third phenomenon is the adverb intentionally. Based on the data in (82), Farkas suggests that intentionally can be used only when the RESP-relation holds between the subject and the situation described by the verb phrase.

(82)  

a. John hurt Mary intentionally.
b. John fell off the ladder intentionally.
c. #John resembles his father intentionally.
d. #John is tall intentionally.

(Farkas 1988:39)
Finally, Farkas’s fourth piece of evidence for the RESP-relation is a class of control predicates. Farkas generalizes that in the case of object-control predicates, if $x$ persuades / convinces / forces / urges / requires $y$ to VP, then the satisfaction conditions for the state of affairs described are such that $y$ is responsible for bringing about the situation named by the VP. This is supported by the observation that when the VP names a situation not under one’s control, the result is odd:

(83) #John \{convinced/persuaded/requested/ordered/required\} Pete to
\{resemble Bill/be tall/be blue-eyed/bleed\}

And, Farkas points out, there are some subject-control predicates whose conditions of satisfaction involve the subject standing in the RESP-relation with the VP. Although Farkas mostly focuses on promise, as in (84), the same observation holds for other predicates of public commitment (85a), as well as for predicates of private commitment such as intend (85b).

(84) #John \{promised\} to \{resemble Bill/be tall/be blue-eyed/bleed\}
(85) a. #John \{agreed/offered\} to \{resemble Bill/be tall/be blue-eyed/bleed\}
   b. #John \{chose/decided/intended/agreed/offered\} to \{resemble Bill/be tall/be blue-eyed/bleed\}

Farkas is careful to distinguish the RESP-relation from the conceptually very similar thematic relation AGENT. Farkas points to two important differences. First, whereas an individual standing in the agent relation to a situation must be syntactically an argument of the predicate associated with the relevant situation, this need not hold for the RESP-relation. For example, in (86), the situation of the shopwindow having a big sale sign in it stands in the RESP-relation with some individual not explicitly represented in the argument structure. Similarly in (87), according to Farkas, John is understood as standing in the RESP-relation with the situation named by the complement to promise even though John binds no argument in this complement.

(86) The shopwindow has a big sale sign in it in order to attract customers.

\[15\]In the interest of space, I will not discuss in detail here other phenomena not considered by Farkas that may also involve the RESP-relation. But I would like to mention a few candidates: in later work, Farkas and Giannakidou (1996) put the RESP-relation to use in making sense of the distribution of extra-wide scope. See also Barker 2002 for an application of the RESP-relation in understanding a particular class of evaluative adjectives. And although not explicitly connected to Farkas’s work, two other empirical phenomena that may be fruitful to explore from this angle include futurates (Copley 2008) and have-causatives (Copley and Harley 2009), which the cited authors argue involve commitment to bringing about an action.
(87) John promised Mary that the children will be in bed by 8.

To (86)–(87) we may add a couple of other kinds of examples of this phenomenon not considered by Farkas. First is the use of *intentional* in (88), which works in relevant respects just like (87). Second is the existence in some languages of imperatives with non-second-person subjects, as in (89) (see Zanuttini et al. 2012 for discussion, from which both of these examples are taken). In these imperatives, the addressee is understood as bearing the RESP-relation to the situation described by the imperative even though there is no second-person argument in the imperative.

(88) It was intentional on John’s part that the children were in bed by 8.

(89) a. Tebulwa: sa:ph rahe!
    table-nom clean-nom be-imp.3s
    ‘The table be clean!’
    BHOJPURI

    b. Che venga anche lui!
    that come also he
    ‘(See to it that) he comes as well.’
    ITALIAN

The second difference Farkas identifies between the RESP-relation and the agent relation is that the agent relation need not encode any notion of intention. For example, it would be relatively uncontroversial to say that John bears the agent relation in sentences like (90), even though this sentence is compatible with a situation in which John broke the window unintentionally (see section 5 for additional discussion).

(90) John broke the window.

4.2 Back to intend

Combining the effective preference analysis of *intend* with the insights from Farkas (1988) leads naturally to the proposal that we revise our preliminary semantics for *intend* in (91) to that in (92).\(^{16}\)

\[
\begin{align*}
\text{[a intends } p\text{]}^w & = 1 \text{ iff } p \in \max\{\text{Effective-Preference}(a,w)\} \quad \text{(to be revised)} \\
\text{[a intends } p\text{]}^w & = 1 \text{ iff } \text{RESP}(a,p) \in \max\{\text{Effective-Preference}(a,w)\} \quad \text{(final)}
\end{align*}
\]

Let us now consider how the revised proposal accounts for the responsibility effects we observed. Since the RESP-relation is a meta-language predicate, we cannot directly access linguistic intuitions about the conditions under which it

\(^{16}\)Farkas (1988) treats RESP as a relation between individuals and situations, whereas I assume here that it is a relation between individuals and propositions. See section 4.3.1 for discussion.
holds. But the following rough natural-language equivalences seem in keeping with Farkas’s proposal (though see section 4.3.2 below for further discussion):

\[(93)\]  
\[
\text{RESP}(a,p)
\approx \text{it is intentional on } a\text{'s part that } p
\approx a \text{ intentionally brings it about that } p
\]

For the special case where the subject of \( p \) happens to be \( a \) (i.e., where we have \( \text{RESP}(a,f(a)) \)), the following also seems appropriate:

\[(94)\]  
\[
\text{RESP}(a,f(a)) \approx a \text{ intentionally } f\text{'s}
\]

As suggested by the paraphrases, I treat \( \text{RESP}(a,p) \) as being veridical on (or entailing) \( p \); this is because part of the conditions of satisfaction for an intention report \( a \text{ intends } p \) is that \( p \) must hold in order for the intention to be satisfied (in Hintikkan terms, \( p \) is true in all those worlds compatible with the attitude holder’s intentions). Armed with these rough equivalences, let’s now reconsider the causation effect:

\[(95)\]  
\[
a. \text{ John intends (for) Bill to leave.}
\]
\[
b. \approx \text{ John intends to bring it about that Bill leave.}
\]

On the current proposal, we get the following semantics for (95a) (here and in what follows, let \( \llbracket \text{John} \rrbracket = j \)):

\[(96)\]  
\[
\llbracket \text{John intends (for) Bill to leave} \rrbracket^w = 1 \text{ iff } \text{RESP}(j,\llbracket \text{Bill leave} \rrbracket) \in \text{max}[\text{Effective-Preference}(j,w)]
\]

‘John’s maximally ranked effective preferences include the proposition that John intentionally brings it about that Bill leave.’

The causation effect is thus accounted for by the presence of the \( \text{RESP} \)-relation.

Consider next the observation that it is odd to deny intentionality in the complement of \( \text{intend} \) (97a), redundant to assert intentionality (97b), and odd to use a complement that names an outcome not ordinarily under one’s control (97c).

\[(97)\]  
\[
a. \# \text{John intends to break the window unintentionally.}
\]
\[
b. \# \text{John intends to break the window intentionally.}
\]
\[
c. \# \text{John intends to resemble his father.}
\]

On the current proposal, the denotations for (97a–c) are (98a–c) respectively:

\[(98)\]  
\[
a. 1 \text{ iff } \text{RESP}(j,\llbracket \text{John break the window unintentionally} \rrbracket) \in \text{max}[\text{Effective-Preference}(j,w)]
\]
'John’s maximally ranked effective preferences include the proposition that John intentionally breaks the window unintentionally.'

b. \( 1 \iff \text{RESP}(j,[[\text{John break the window intentionally}]]) \in \max[\text{Effective-Preference}(j,w)] \)

‘John’s maximally ranked effective preferences include the proposition that John intentionally breaks the window intentionally.’

c. \( 1 \iff \text{RESP}(j,[[\text{John resemble his father}]]) \in \max[\text{Effective-Preference}(j,w)] \)

‘John’s maximally ranked effective preferences include the proposition that John intentionally resembles his father.’

We thereby accurately predict that (97a–c) should have a status similar to (99a–c), respectively.

(99) a. #John intentionally broke the window unintentionally.
   b. #John intentionally broke the window intentionally.
   c. #John intentionally resembled his father.

Notably, the proposal does not commit us to the view that (97)/(99) are infelicitous in all contexts but rather only that they should have a similar status. In this connection, Paul Egré (pers. comm.) suggests that (99a) could be possible in a context in which someone orders John to break the window without thinking about it. So John reasons that if he takes the appropriate drugs, this will adversely affect his motor skills, thereby increasing the odds of inadvertently breaking things around him. In this context, (97a) seems true and felicitous, and if John is successful in his plan, (99a) seems true and felicitous as well.

4.3 More on the RESP-relation

Having laid out the core analysis and shown how it accounts for the relevant data, there are still a couple of issues surrounding the RESP-relation that need to be addressed. The first is reconciling the fact that Farkas treats RESP as a relation between individuals and situations whereas I treat it as a relation between individuals and propositions. The second has to do with whether we can be more precise about the content of the RESP-relation, moving beyond the natural language paraphrases that I relied on above. In what follows, I take these two issues up in turn.

4.3.1 Probing the semantic type of the RESP-relation

The proposed semantics for intention reports, repeated in (100), assumes that the infinitival complement to intend denotes a proposition, and that RESP is a relation between individuals and propositions. Other options are conceivable. Farkas (1988)
for example treats RESP as a relation between an individual and an eventuality (or in her terminology: situation). This option could be implemented by treating the complement to intend as a property of eventualities rather than a proposition and redefining its truth conditions as in (101).

\[
\text{[a intends } p\text{]}^w = 1 \iff \text{RESP}(a, p) \in \max[\text{Effective-Preference}(a, w)]
\]

\[
\text{[a intends } p\text{]}^w = 1 \iff \exists e [p(e) \land \text{RESP}(a, e)] \in \max[\text{Effective-Preference}(a, w)]
\]

Actually, the choice between (100) and (101) conflates two separate issues that need to be distinguished. The first issue has to do with the semantic type of the infinitival complement to intend: is it proposition-denoting? Or, as an anonymous reviewer wonders about, could it be that it is not large enough to include whatever functional projection gives rise to quantification over the eventuality argument of the predicate (say, Aspect), and therefore denotes a property of eventualities? The second issue is whether RESP takes as its argument the denotation of the entire complement (whether that be a proposition or a property of eventualities) or just the eventuality argument associated with that complement.

I do not know how to settle the first issue. Wurmbrand (2014) argues that infinitival complements to future-oriented verbs like intend do not contain Tense (though they do contain the future modal woll), but does not explicitly argue for or against the presence of Aspect in such complements. Keshet (2008), on the other hand, argues that all infinitival complements have an aspectual position. It can be observed that complements to intend admit both the progressive (102a) and the perfect auxiliary (102b), but this counts as evidence for the propositional view only insofar as it can be established that these auxiliaries do indeed bind the predicate’s eventuality argument, which is a delicate question. Consequently, I will remain neutral on this issue.

\[
\text{(102) a. John intends [to be studying when his parents get home].}
\]

\[
\text{b. John intends [to have lost five pounds by February].}
\]

The second issue, however, may be more tractable. Farkas’s treatment of RESP as a relation between individuals and eventualities is a priori attractive insofar as it makes RESP look like a thematic relation, to which it bears a close intuitive resemblance. But an argument can be made to support the view that RESP has to take as its argument something larger than this. The argument rests on the premise that the expression intentionally is a close natural-language analogue of RESP and therefore should have similar logical properties.

By way of background, consider the event report in (103a) and its corresponding neo-Davidsonian semantics in (103b).
(103)  a. Oedipus married his mother.
   b. \( \exists e[\text{marry}(e) \land \text{Ag}(e,o) \land \text{Pt}(e,m)] \)
      ‘There is some event e such that e is a marrying event, the agent of e
      is Oedipus, and the patient of e is Oedipus’s mother.’

Now, taking intentionally to be a proxy for the RESP-relation, there are at least three logically conceivable ways of analyzing (104).

(104) Oedipus intentionally married his mother.

We could follow Farkas in treating RESP as a relation between individuals and eventualities so that it looks just like an ordinary thematic relation, in this case assigning an extra role to Oedipus, as in (105).

(105) **Hypothesis A**: RESP as a relation between individuals and eventualities
     \( \exists e[\text{marry}(e) \land \text{Ag}(e,o) \land \text{Pt}(e,m) \land \text{RESP}(e,o)] \)

By contrast, we could also entertain the possibility that RESP is a relation between individuals and propositions, as in (106).

(106) **Hypothesis B**: RESP as a relation between individuals and propositions
     \( \text{RESP}(o,[\lambda w.\exists e[\text{marry}(e) \land \text{Ag}(e,o) \land \text{Pt}(e,m) \text{ in } w]]) \)

Finally, yet a third logical possibility is that RESP is a relation between individuals and properties of eventualities:

(107) **Hypothesis C (preliminary)**: RESP as a relation between individuals and properties of eventualities
     \( \text{RESP}(o,[\lambda e.[\lambda w.\text{marry}(e) \land \text{Ag}(e,o) \land \text{Pt}(e,m) \text{ in } w]]) \)

As it happens, (107) is not a realistic hypothesis as stated, because it leaves no way for Tense and Aspect to be compositionally integrated. We can solve this by giving RESP a third argument, namely an eventuality, so that it ends up being a ternary relation between individuals, properties of eventualities, and eventualities, as in (108). Here as elsewhere I will for simplicity’s sake assume that the leftover eventuality argument is existentially bound, something that in a finer-grained analysis might be achieved by Aspect.

(108) **Hypothesis C (revised)**: RESP as a relation between individuals, properties of eventualities, and eventualities
     \( \exists e'[\text{RESP}(o,[\lambda e.[\lambda w.\text{marry}(e) \land \text{Ag}(e,o) \land \text{Pt}(e,m) \text{ in } w]],e')] \)
I will not try here to adjudicate between Hypotheses B and C, but I believe there is good reason for rejecting Hypothesis A. The argument for rejecting Hypothesis A is that \textit{RESP/intentionally} induces referential opacity on the direct object of the verb; that is, (109a) and (109b) can differ in truth conditions even on the assumption that \textit{his mother} and \textit{Jocasta} are extensionally equivalent (cf. Thomason and Stalnaker 1973). This is unexpected on Hypothesis A, where the direct object is not in the scope of \textit{RESP}, but consistent with both Hypotheses B and C, where the direct object is in the scope of \textit{RESP}.

(109)  
a. Oedipus intentionally married \textbf{his mother}.

b. Oedipus intentionally married \textbf{Jocasta}.

I conclude based on the foregoing that \textit{RESP} must be a relation between an individual and some intensional type that includes the direct object (i.e., a proposition or a property of eventualities) and should not be analyzed as a relation between an individual and an eventuality.

4.3.2 Probing the content of the \textit{RESP}-relation

Above, I have relied on the idea that we can intuit the content of the \textit{RESP}-relation by translating \textit{RESP}(a,p) into its close natural language analogues \textit{a intentionally brings it about that p} or \textit{it is intentional on a’s part that p}, and for the special case where the subject of \textit{p} is \textit{a} (i.e., \textit{RESP}(a,f(a))), \textit{a intentionally f}s. But a reasonable question to ask is whether we can do better than relying on these natural language analogues.

Let me first address this question in the context of the narrow goals of this paper. In the context of this paper, invoking the \textit{RESP}-relation in the semantics of \textit{intend} helps us achieve two goals. First, it helps account for the responsibility effects associated with intention reports discussed in section 2.6 above. Second, it helps us make sense of the similarities among various phenomena that involve intentional action (rationale clauses, imperatives, some agent-oriented adverbs, and some control predicates), because we can say that these similarities are underpinned by the common involvement of \textit{RESP} in all of these phenomena. With respect to these two particular goals, it is not clear to me that any value would be added in further limning the \textit{RESP}-relation. A comparison might be made here to thematic relations: these are often treated as semantic primitives, and for many purposes this is sufficient, despite the fact that there are difficult puzzles surrounding the question of exactly when the agent relation (for example) holds and when it does not (see e.g. the recent discussion in Williams 2015:141–144). And of course thematic relations are just the tip of the iceberg: even a mundane predicate such as that named by \textit{cat} has vague boundaries (Chierchia 2010:117), though for most purposes we
can treat it as a primitive.

That being said, I think it is likely that a more sophisticated understanding of the RESP-relation is possible and that such an understanding may turn out to be useful for some purposes beyond those of this paper. In this connection, I simply want to point to the work of Egré (2014) (cf. also Egré and Cova 2015). Drawing on relevant work in experimental philosophy concerning people’s intuitions about the conditions under which someone’s action counts as intentional (see especially Knobe 2003a,b; Pettit and Knobe 2009), Egré proposes a semantics for the predicate intentional according to which it is a vague, gradable, and multi-dimensional predicate sensitive to the degree to which the agent desires the relevant outcome and the degree to which the agent can foresee how his/her actions will lead to the outcome. Plausibly, RESP is amenable to the same kind of approach. And since even core thematic relations like agent have been suggested to be vague and context-sensitive (Pietroski 2004:184, cited by Williams (2015):144), it seems plausible that RESP would be as well.

5 Compositionality: To coerce or not to coerce?

On the proposal presented above, intention reports that instantiate syntactic control, like (110), have essentially the same status as intention reports that do not instantiate syntactic control, like (111). In both cases, the complement to intend instantiates p in the formula repeated in (112). And in both cases, John names both the individual whose effective preference structure is accessed as well as the individual who bears the RESP-relation with p. The only difference is that in (110), in virtue of being a control sentence, John also names the participant associated with the subject position of break the window, whereas in (111), Bill takes this place.

Call this a COERCION-FREE semantics for intention reports.

(110) John intended to break the window.
(111) John intended for Bill to break the window.
(112) \([a \text{ intends } p]^w = 1 \text{ iff } \text{RESP}(a,p) \in \max[\text{Effective-Preference}(a,w)]\]

A COERCION-BASED semantics for intention reports, on the other hand, is built around the idea that whereas (110) is compositionally straightforward, something special has to happen in the case of (111). More specifically, a proponent of the coercion-based view might react to what I have proposed in this paper in

\[17\] How exactly the control relation gets encoded by the syntax and interpreted by the semantics is a very interesting question but one that would take us too far afield here: for two recent approaches to the syntax-semantics of control consistent with the general architectural assumptions of this paper, see Stephenson 2010; Pearson 2016.
something like the following way: in (110), what this paper identifies as the RESP-
relation embedded into the semantics of \textit{intend} is actually just part of the ordinary
thematic structure associated with \textit{break the window}, whose subject bears the RESP-
relation to the described event. What the predicate \textit{intend} does is SELECT FOR a
control complement whose unexpressed subject bears the RESP-relation. This selec-
tional restriction is satisfied in (110). But it is not satisfied in (111). Consequently,
the grammar repairs this selectional restriction violation by superimposing on top of
the complement a new RESP-relation whose individual argument can be controlled
from the matrix clause. (Something like this is entertained by authors such as Perl-
mutter (1968); Jackendoff (1996); Jackendoff and Culicover (2003); Culicover and
Jackendoff (2005); Grano (2015), though I have paraphrased the idea to make it
consistent with the terminology used elsewhere in this paper; none of these authors,
for example, use the term \textit{RESP}.)

Is there any independent evidence for assigning (111) a special, coerced sta-
tus? Jackendoff and Culicover (2003) cite the paraphrase relation that intuitively
holds between sentences like (113a) and sentences like (113b) as support for a co-
ercion analysis.

(113) \begin{align*}
\text{a. John intended for Bill to break the window.} & \\
\approx \text{b. John intended to bring it about that Bill break the window.}
\end{align*}

But a paraphrase relation is not in itself probative of coercion. For example, a
paraphrase relation also holds between (114a) and (114b), and (114a) is indeed
often analyzed as involving coercion (see e.g. Pustejovsky 1995), but in a recent
paper, Piñango and Deo (2016) mount a convincing case that there is in fact no
coercion here.

(114) \begin{align*}
\text{a. John began the book.} & \\
\approx \text{b. John began to read/write the book.}
\end{align*}

Suppose, though, that we adopt the coercion analysis for the sake of argu-
ment and see where it takes us. An immediate problem for the coercion analysis is
that there seems to be nothing inherently intentional about the relation borne by the
subject in \textit{break the window}. Although there do exist some inherently intentional
verbs like \textit{murder} (see Kamp 1999–2007), an event report like (115a) seems to be
underspecified for intention, as it could be truthfully uttered in a scenario where
John unintentionally broke the window. It is also compatible with an explicit denial
of intention, as in (115b). This suggests that it is not enough for \textit{intend} to rely on a
pre-existing thematic relation; RESP is needed to encode intentionality and thereby
account for the full range of responsibility effects, even though there will often be
a fair amount of overlap between what RESP contributes and what is already con-
tributed by core thematic structure.

(115)  
   a. John broke the window.  
   b. John unintentionally broke the window.

But we could be a bit more generous. Suppose we were to entertain the view that the predicate *break the window* harbors an ambiguity, and that one of its readings is specified for intentionality. Then it would be conceivable that *intend* comes with a selectional restriction that lets it combine with the intentional reading of *break the window* only. Is such an ambiguity plausible? An early discussion of the question of whether event reports like (115a) are underspecified or ambiguous with respect to intentionality is taken up by Zwicky and Sadock (1975), who ultimately conclude that the facts do not clearly support either the ambiguity view or the underspecification view. One point Zwicky and Sadock make is that the so-called ‘identity tests’ for ambiguity are unilluminating in cases where the two readings being tested stand in a privative rather than a polar opposition. For example, (116a) illustrates a standard attachment ambiguity. No ‘crossed’ reading is available whereby the ambiguity is resolved in one way in the first conjunct but the other way in the elided VP in the second conjunct. (116b), on the other hand, can be used to report a situation wherein John ate a *ham* sandwich but Bill ate a *turkey* sandwich, thereby supporting the view that *sandwich* is underspecified with respect to these details rather than ambiguous. But even though a crossed reading is available in (116c) wherein John broke a mirror intentionally and Bill broke a mirror unintentionally, this does not rule out a version of the ambiguity view wherein one reading is underspecified with respect to intention and the other reading is intention-specific. Such an approach is compatible with (116c) being true in a ‘crossed’ scenario, where the ambiguity is resolved to the underspecified reading in both conjuncts.

(116)  
   a. John saw the man with the telescope, and so did Bill.  
   b. John ate a sandwich, and so did Bill.  
   c. John broke a mirror, and so did Bill.

In the context of the present investigation, though, VP ellipsis actually is illuminating and the evidence points toward underspecification rather than ambiguity. In particular, it is telling that there is nothing contradictory about (117). If *break the window* had an unambiguously intentional reading that *intend* selected for, then the expectation would be that if this VP were embedded under *intend* and then served as an antecedent for VP ellipsis, the elided VP should also be unambiguously intentional. But this is not the case, as (117) attests to: it is possible to explicitly deny intention even when the VP in question is anteceded by a VP em-
bedded under *intend*. (I assume here that the licensing conditions for VP ellipsis include the requirement that there be a semantically identical antecedent, as in e.g. Merchant 2001.)

(117) John intended to [break the window], and in the end he did ⟨break the window⟩, albeit not intentionally.

This suggests that *break the window* does not have an inherently intentional reading, thereby undermining the coercion-based approach to intention reports.

A lot more could be said here. For example, a proponent of the coercion analysis could try to make sense of (117) via a decompositional approach to thematic structure whereby the intentionality encoded into the complement of *intend* is low enough in the verbal projection to be selected by *intend* but too high to be targeted by VP ellipsis. And one might also assess the plausibility of coercion based on non-semantic factors such as sentence processing or cross-linguistic considerations. But I hope to have made the case here that a coercion-free analysis is plausible and perhaps even preferable. That being said, in the immediately following section we will look at another issue that may ultimately point us back to the coercion-based approach, but pending the resolution of some rather delicate matters. Consequently, I will not come to a firm conclusion here.

6 **RESPlesness**

The causation effect discussed in section 2.6.1 above has not gone unchallenged. In particular, the robustness of the causation effect has been called into question by Boeckx et al. (2010) (cf. also Vermazen 1993). Insofar as the causation effect serves as an important empirical linchpin for the RESP-component of intention reports argued for in this paper, I take some space in this section to consider the analytical implications of these authors’ challenge.

Responding to Culicover and Jackendoff’s (2005) claim that (118a) can be paraphrased approximately as (118b), Boeckx et al. say that “it is not clear to us that [(119) ] is a contradiction, which it should be if [(118a)] meant [(118b)]” (p. 233).

(118) a. Hilary intended for Ben to come to the party.
   b. ≈ Hilary intended to bring it about that Ben come to the party.

(119) Hilary intended for Ben to come to the party, though being lazy and complacent, she intended to do nothing whatsoever to bring this about.

I agree with Boeckx et al. that (119) is not clearly contradictory. But does this really tell against the putative synonymy of (118a) and (118b)? (118b) asserts that
Hilary intends to bring something about. By contrast, what the relevant portion of (119) denies is not that Hilary intends to bring something about but rather that Hilary intends to *do something* to bring something about. So what we have to ask is whether bringing something about entails doing something. And linguistic intuition tells us that it does not, at least not necessarily. For example, consider the scenario described in (120). Here, there is a sense of *do* and a sense of *bring about* that render sentences like (120a–b) true and non-contradictory in the relevant context. So the facts are consistent with the view that *bring about* involves a rather weak kind of causation that need not involve action in the everyday sense. And the fact that this same scenario cannot be accurately described monocausally with causative *drown*, as seen in (120c), suggests that this weak notion may be **INDIRECT CAUSATION** in the sense of Wolff (2003).

(120) **CONTEXT:** Kim and Sandy are on a boat. Sandy accidentally falls overboard and Kim, although perfectly capable of rescuing her, chooses not to.
   a. (By not doing anything,) Kim brought it about that Sandy drowned.
   b. (Kim did not do anything, and) Kim (thereby) brought it about that Sandy drowned.
   c. #Kim drowned Sandy.

Returning to the Hilary/Ben scenario, then, one suggestion is that (119) is compatible with a scenario in which Hilary intends to bring it about that Ben come to the party, insofar as she (a) thinks Ben will come, (b) thinks that she could stop him if she wanted to, but (c) is committed to not taking any such obstructive measures. On this view, it is this commitment not to act that the truth of the intention report hangs on. (In fact, the philosophy literature has a special name for such intentions: **NEGATIVE INTENTIONS**. See e.g. Harman 1976.)

In light of these considerations, a better of way of probing the synonymy (118a) and (118b) is to try pairing (118a) with the negation of (118b), as in (121). Whereas (119) is not clearly contradictory, (121) is somewhat more difficult to judge — so difficult, in fact, that I am reluctant to hang any conclusion on it.

(121) ?#Hilary intended for Ben to come to the party, though being lazy and complacent, she did not intend to bring it about that Ben come to the party.

Given the subtleties involved in the Hilary/Ben scenario, it will be useful to turn to a clearer (and as far as I know, fresh) challenge to the robustness of the causation effect, namely the existence of naturally occurring (and to my ear, fairly natural sounding) examples like those in (122). Sentences like these do not invite the causative paraphrase, as indicated in (123).
I didn’t intend for it to rain while we were planting today.

Although Rizwan & Darsana didn’t intend for it to rain on their wedding day, they did intend on having an amazing party and that is just what they did!

I didn’t intend to bring it about that it rain while we were planting today.

Rizwan and Darsana didn’t intend to bring it about that it rain on their wedding day.

I will refer to the phenomenon exemplified by the sentences in (122) as ‘RESPlessness’, and it is the task of the rest of this section to discuss the potential implications of RESPlessness for the analysis of intention reports espoused in this paper. I would also like to note at the outset that at face value, RESPlessness is equally challenging both to the coercion-free and coercion-based account of non-control intention reports as discussed in section 5 above, because both accounts would seem to predict that intention reports always involve RESP even though they disagree over how it comes about. That being said, RESPlessness may ultimately bear on the choice between coercion-free and coercion-based accounts, for reasons we will return to below.

Let me begin by mentioning two possible approaches that I think are unlikely to be successful. First, one could give up on the idea that intention reports encode responsibility in the way I claim it does. But this would sit awkwardly both with the other sources of evidence for the responsibility effect, and with the fact that most non-control intention reports do invite the causative paraphrase. Second, one could maintain the idea that intention reports encode responsibility, but weaken or bleach the notion of responsibility (a “generalize to the worst case” strategy) so that it does not explicitly encode causation, hence suppressing the prediction that intention reports should always be amenable to causative paraphrases. See in this connection the semantics for intentional proposed by Egré (2014) (mentioned in section 4.3.2 above), where the basic proposal is that an outcome counts as intentional iff the agent sufficiently desires the outcome and sufficiently foresees how it will come about. We might then say that one particularly salient way in which one foresees how an outcome will come about is by causing it: deliberately taking action so as to bring the outcome about. But at the fringe are cases where the intentional status of an outcome is verified by pure foresight, stripped of causation, as in the rain examples.

Rather than giving up on responsibility altogether (at one extreme) or cling-
ing to a (heavily bleached) notion of responsibility in all cases (at the other extreme), I believe that a more promising avenue to explore is that under SOME conditions, the RESP-component ordinarily associated with intention reports is absent. This allows us to maintain the strong thesis that responsibility has to do with causation (which seems best in keeping with how Farkas 1988 understood it; see section 4.1 above), and thereby not lose the insight that intend (in the usual, responsibility-laden sense) normally sounds odd in the context of weather outcomes just as is the case for other expressions having to do with intentional action considered in section 4.1 above such as imperatives (124b) and rationale clauses (124c).

(124)  
  a. #John intended for it to rain.  
  b. #Make it rain!  
  c. #It rained in order to water the plants.

There are at least two plausible ways of making sense of the idea that RESP is sometimes but not always part of the meaning of intend. The first way is to appeal to polysemy. On the simplest version of this, one would say that intend is always an effective preference predicate but that it comes in both RESP-inducing (125) and non-RESP-inducing flavors (126).

(125)  
  Hypothesis A: Polysemy  
  a. \[a \intends_1 p\] \(w = 1\) iff \(\text{RESP}(a,p) \in \max[\text{Effective-Preference}(a,w)]\)  
  b. \[a \intends_2 p\] \(w = 1\) iff \(p \in \max[\text{Effective-Preference}(a,w)]\)

Such an approach is attractive insofar as slippage in the relationship between an attitude lexeme and a particular attitude expressed is well attested elsewhere, such as in the way want sometimes takes on a meaning like intend (see Heim 1992 and section 3 above), and in the hybrid desiderative/doxastic nature of expect (Bresnan 1972) and of Mandarin xiăng ‘think’/’want’ (Nguyen 2013) and Navajo nízní ‘think’/’want’ (Bogal-Allbritten 2016).

Another way of making sense of the idea that RESP is sometimes but not always part of the meaning of intend, suggested to me by an anonymous reviewer, is to entertain the idea that the RESP component of intend is presuppositional/not at-issue and hence goes away under certain conditions. The initial appeal of such an approach is the observation that the naturally occurring instances of RESPlessness in (122) above both involve negation. And indeed, the significance of negation in these examples in reinforced by considering minimal pairs like (126a–b): (126a) can be felicitously used to express that the picnic organizers did not want rain or guide their actions around the possibility of rain, whereas (126b) is a very odd way of expressing that the picnic organizers did want rain and did guide their actions around the possibility of rain.

45
126) CONTEXT: It starts to rain at a picnic.
   a. We didn’t intend for it to rain today (but luckily there is a shelter nearby).
   b. #We intended for it to rain today (so we chose a location with a shelter nearby).

If the RESP-component of intend is presuppositional, then this sensitivity to negation would fall under the broader and independently attested phenomenon of presupposition cancellation under negation, for which a number of theoretical approaches exist (see Abrusán 2016 for a recent overview).

That being said, a presuppositional approach to the RESP-component faces at least a couple of challenges that urge caution in going down this path. First, insofar as presupposition cancellation is not possible in unembedded, non-negated environments, this approach commits us to the view that RESPlessness should not be possible in non-negated intention reports. As discussed above, the apparent RESPlessness of the Hilary/Ben sentence in (119) above may be spurious given the existence of negative intentions, but this is not a certain conclusion. A second challenge for the presuppositional approach concerns the ‘separability’ of the RESP-component from the rest of the proposed semantics for intention reports. In familiar cases of presupposition, the hypothesized presuppositional component can always be broken out as an independent proposition. This stands in contrast to the way RESP is treated in the proposed semantics for intention reports, wherein RESP is embedded into the semantic formula that expresses the (at-issue) truth conditions. Take a simple example like (127). A first approximation of its semantics under the presuppositional RESP hypothesis might look something like (128).

127) John intends to break the window.
128) Hypothesis B: Presuppositional/not at-issue RESP
   a. Asserted/At-issue:
      \[\text{[John break the window]} \in \text{max}[\text{Effective-Preference}(j,w)]\]
   b. Presupposed/Not at-issue:
      \[\text{RESP}(j,\text{[John break the window]})\]

The semantics of RESP would have to be revised so that it is not veridical on its propositional argument; we do not want (128) to convey that John does indeed break the window. Even if we made this revision, the remaining problem is that by separating the responsibility component from the preference component, we lose the Searle insight discussed in section 2.6.4 above that responsibility figures into the conditions of satisfaction of the preference. One potential way of solving this issue would be to treat the RESP-component as a selectional restriction on the kinds of
complements *intend* can combine with: it can combine only with complements that come pre-packaged with a RESP-relation; this way, the RESP-component still figures into the at-issue meaning (in those cases where the presupposition is not cancelled) because it is part of the meaning of the complement. This then places us back in the coercion approach to intention reports that do not involve syntactic control, and may ultimately even tip the balance back in its favor, pending the resolution of the issues for the coercion approach raised in section 5 above.

Regardless of whether we adopt the polysemy approach or the presuppositional approach to RESPlessness, both approaches entail that effective preferences are principle isolable from responsibility and hence give rise to the expectation that we might be able to find other natural language predicates that are like *intend* in naming an effective preference but are different in not encoding the RESP-relation. In this connection, it bears noting that the apparent cases of RESPlessness we’ve looked at can all be comfortably paraphrased using *count on*, as in (129).

(129) a. Hilary counted on Ben coming to the party (, though being lazy and complacent, she did not intend to bring it about that Ben come to the party).
   
b. I didn’t count on it raining while we were planting today.
   
c. Rizwan and Darsana didn’t count on it raining on their wedding day.

As will be discussed in a bit more detail in the conclusion in section 8 below, *count on* is quite similar to *intend* in that it names a preference that the attitude holder thinks has a good chance of being realized and that the attitude holder is using to guide his or her actions. But unlike *intend*, it is responsibility-free; i.e., it strips away any notion that the satisfaction conditions depend on the attitude holder achieving the outcome him/herself. (See section 8 below for the actual linguistic diagnostics confirming these claims: here I just sketch the basic intuition.) This invites the hypothesis that *count on* is just like *intend* but without the RESP-component, which suggests that effective preferences are indeed isolable from responsibility.  

18 An anonymous reviewer suggests that RESPless *intend* is more comfortably paraphrased using *expect* rather than using *count on*. And on one reading, *expect* is purely doxastic and has no desiderative component. So the question is whether RESPless uses of *intend* are similarly pure doxastics. If this turned out to be the case, it would challenge the simple picture I present here whereby RESPless *intend* is still an effective preference predicate. I agree with the reviewer that RESPless *intend* is comfortably paraphrased by *expect*, but as argued by Bresnan (1972), *expect* is ambiguous or polysemous in such a way that one of its readings is desiderative, thereby complicating the theoretical interpretation of the *intend*/expect paraphrase relation. Evidence supporting the view that *intend* and *count on* generally have a desiderative component whereas *expect* at least sometimes does not comes from the minimal trio in (i): it is odd to pair an *intend*- or *count on*-sentence with a
7 Comparison to previous approaches

As noted in the introduction, the formal semantics literature is sparse when it comes to intention reports. But there are two recent proposals that I want to discuss in this section, namely those found in Grano 2015 and Pearson 2016. This will serve both to better situate this paper’s analysis with respect to the previous literature and to throw into relief certain aspects of this paper’s analysis that have not yet been explicitly highlighted.

7.1 Grano 2015

The background for Grano’s (2015) semantics for intend is Portner’s (2004; 2007) proposal that clause types are each associated with a distinct semantic type and relate to a distinct discourse component: declarative clauses denote propositions and can consequently be used to update the Common Ground (a set of propositions), interrogative clauses denote sets of propositions and can consequently be used to update the Question Set (a set of sets of propositions), and imperative clauses denote properties and can consequently be used to update the addressee’s To-Do List, modeled as a set of properties such that “the participants in the conversation mutually assume that [the addressee] will try to bring it about that he or she has each of these properties” (Portner 2007:352).

Against this backdrop, Grano observes that it is always infelicitous to accept an imperative while denying the corresponding intention, even as one considers the different kinds of imperative flavors identified by Portner (2007):

(130) a. Sit down right now! (order)
    b. OK. #But I don’t intend to. (Cf.: OK. But I don’t want to.)

(131) a. Have a piece of fruit! (invitation)
    b. OK. #But I don’t intend to. (Cf.: OK. But I don’t want to.)

(132) a. Talk to your advisor more often! (suggestion)

### Notes

48

denial of (any kind of) desire (ia–b), whereas the same is not true of expect-sentences. That being said, the judgments are not crystal-clear, and I would not be too surprised to find desire-free uses of intend and count on, in the same way that expect (Bresnan 1972), Mandarin xiǎng ‘think’/‘want’ (Nguyen 2013), and Navajo nízin ‘think’/‘want’ (Bogal-Allbritten 2016) all have both desiderative and desire-free doxastic flavors.

(i) a. Hilary intends for Ben to come to the party, **though in no way does she want him to.**
    b. Hilary counts on Ben coming to the party, **though in no way does she want him to.**
    c. Hilary expects Ben to come to the party, **though in no way does she want him to.**
Grano therefore concludes, following an earlier suggestion by Ninan (2005), that To-Do Lists come in public and private varieties (analogously to the way the Common Ground has as its private counterpart individual belief): imperatives target the addressee’s Public To-Do List whereas intention reports target an attitude holder’s Private To-Do List.

Building on this conclusion, Grano proposes that intend has the semantics in (133), where PrivTDL is a function from an individual to the set of properties constituting that individual’s Private To-Do List.

\[(\text{intend}) = \lambda P^{(e)} \langle e \rangle \lambda x. P \in \text{PrivTDL}(x)\]

Crucial to Grano’s proposal is that intend combines with a property-denoting complement. Taking the view that control complements like (134) are property-denoting whereas non-control complements like (135) are proposition-denoting (Dowty 1985), (135) incurs a type mismatch. Updating an idea due to Perlmutter (1968), Grano proposes that this mismatch is repaired via the silent causative predicate in (136). In this way, the causation effect — i.e., the observation that (135) can be paraphrased as John intended to bring it about that Bill leave — is made sense of.

\[(\text{cause}) = \lambda p \lambda x. x \text{ brings it about that } p\]

The primary strength of this approach lies in the deep analytical connection it identifies between intention reports and imperatives, which seems quite attractive. But instead of cashing out that connection via the RESP-relation, as I have attempted to do, Grano cashes it out type-theoretically, the animating idea being that natural language models objects of commitment (whether public or private) as properties. This raises many questions. Here, in the interest of space, I will raise just what I see as the most serious concern. Consider the intention reports in (137).

\[(\text{intend})\]
\[(\text{intend}) = \lambda P^{(e)} \langle e \rangle \lambda x. P \in \text{PrivTDL}(x)\]

\[(\text{cause}) = \lambda p \lambda x. x \text{ brings it about that } p\]

On the coercion-free analysis of intention reports that I have argued for above, all three of the intention reports in (137) involve the attitude holder standing in the RESP-relation with the complement. (137a), we might say, is the easiest to
interpret, because it is not hard to imagine how John could have responsibility over an eventuality in which he is the agent of a window breaking. (138b) by contrast requires a bit more work since it requires us to construe John as overseeing an eventuality in which he is not a participant and that has its own agent, Bill. Finally, (138c) is the most difficult because one has to imagine ways in which John could have control over his resembling his father. In summary, on this kind of approach, the perceived differences in interpretive ease do not reflect different grammatical mechanisms (such as coercion) but rather the ease with which we can imagine a scenario that would verify the relevant RESP-relation.

Contrast this with the analysis of Jackendoff and Culicover (2003). They would say that intend selects for an action, which is satisfied in (137a), whereas in (137b–c), the complements denote non-actional situations and hence coercion would be needed to interpret these sentences. Modulo the reservations about appealing to coercion discussed in section 5 above, there is something attractive about this idea: (137b–c) require extra work in a way that (137a) does not.

Grano’s (2015) analysis, by contrast, has the somewhat bizarre consequence that (137a) and (137c) pattern together in being coercion-free, since both sentences involve a control complement, whereas (137b) requires coercion. And yet if anything, the work involved in interpreting (137c) (as measured, say, by the urge to paraphrase (137c) as John intended to bring it about that he resemble his father) is even greater than the work involved in interpreting (137b).

In summary, it seems sensible to treat (137a–c) in a uniform way, or to single out (137b–c) and assign them a special coerced status. But to treat (137a) and (137c) uniformly to the exclusion of (137b), as Grano (2015) would have it, runs contrary the intuition that motivates the coercion analysis in the first place.

7.2 Pearson 2016

Although not focused on intention reports in particular, Pearson’s (2016) paper on partial control in attitude reports contains an appendix with worked out denotations for a number of attitude predicates including expect, promise, remember, regret, be glad, be sorry, and intend. Abstracting away from some orthogonal details that need not concern us here, the semantics that Pearson proposes for intend essentially boils down to the following:

\[
\text{(138)} \quad \text{[intend]}^w = \lambda p . \lambda x . \forall w' [w' \text{ is compatible with what } x \text{ believes in } w \rightarrow x \text{ brings it about that } p \text{ in } w']
\]

Pearson says of her proposed denotation that it captures the intuition that “if Mary intends to go to the movies, then she has the belief, ‘I will bring it about that I go to
the movies”’’ (p. 734).

So, let’s consider how well (138) fares against the empirical properties of intention reports laid out in section 2 above. The first thing to note is that by analyzing intentions as a species of belief, (138) gets “for free” all of those empirical properties of intention reports that mirror belief reports: realism, conjunction introduction, monotonicity, and non-gradability.

If we take “$x$ brings it about that $p$” at face value, then a shortcoming of the analysis is that it predicts that (139) should be a contradiction, contrary to fact. (139) would for example be true in a scenario in which John believes himself to be clumsy and accident-prone and so thinks that he will accidentally bring it about that he break the window.

(139) John believes he’ll bring it about that he break the window, but John does not intend to break the window.

One move we could make toward remedying this shortcoming would be to replace “$x$ brings it about that $p$” with $\text{RESP}(x,p)$:

$$[\text{intend}]^w = \lambda p \lambda x. \forall w' [w' \text{ is compatible with what } x \text{ believes in } w \rightarrow \text{RESP}(x,p) \text{ in } w']$$

Then the question that needs to be asked is whether we can identify intending to act with believing that one will (intentionally) act in such a way. Typically, these notions go hand in hand, but Bratman’s (1987) influential philosophical work on intention proffers counterexamples in both directions. First, Bratman entertains a scenario where one can (supposedly) have an intention without the corresponding belief:

Perhaps I intend to carry out a rescue operation, one that requires a series of difficult steps. I am confident that at each stage I will try my best. But if I were to reflect on the matter, I would have my doubts about success. I don’t have other plans or beliefs which are inconsistent with such success; I do not actually believe I will fail. But neither do I believe I will succeed.

(139) John believes he’ll bring it about that he break the window, but John does not intend to break the window.

(140) \[\text{[intend]}^w = \lambda p \lambda x. \forall w' [w' \text{ is compatible with what } x \text{ believes in } w \rightarrow \text{RESP}(x,p) \text{ in } w']\]

Then the question that needs to be asked is whether we can identify intending to act with believing that one will (intentionally) act in such a way. Typically, these notions go hand in hand, but Bratman’s (1987) influential philosophical work on intention proffers counterexamples in both directions. First, Bratman entertains a scenario where one can (supposedly) have an intention without the corresponding belief:

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(139) John believes he’ll bring it about that he break the window, but John does not intend to break the window.

Second, Bratman entertains a scenario where one can (supposedly) have a belief without the corresponding intention:

Suppose I have a fleeting craving for a chocolate bar, one which induces a fleetingly predominant desire to eat one for dessert. And suppose that just as fleetingly I notice this desire and judge (in a spirit of resignation, perhaps) that it will lead me to so act. […] I am inclined to say that
I had no [...] intention [to eat a chocolate bar for dessert], for I was never appropriately settled in favor of such a dessert. (Bratman 1987:20)

These two scenarios seem consistent with the truthful, non-contradictory status of (141) and (142), respectively.19

(141) I intend to rescue Susan, but I’m not sure I’ll get to her in time.
(142) Although I didn’t intend to have a chocolate bar, I knew that I would.

Are these facts reconcilable with the belief-based semantics for intend? To answer that, we need to compare (141)–(142) with minimal variants in which intend is replaced by believe:

(143) I believe I’ll (intentionally bring it about that I) rescue Susan, but I’m not sure I’ll get to her in time.
(144) #Although I didn’t believe I’d (intentionally bring it about that I) have a chocolate bar, I knew that I would.

To my ear, (143) seems no more contradictory than (141) (believe does not require certainty on the part of the attitude holder), so this is no problem for the belief-based approach to intend. (144), by contrast, does sound contradictory, and the contrast between (142) and (144) is problematic for the Pearson-style belief-based approach to intend.

A second shortcoming of treating intending as a kind of believing has to do with the facts surrounding anankastic conditionals. If intention reports are just beliefs about what one will (intentionally) bring about, then the two should be semantically interchangeable and we would not expect the contrast in (145)–(146).

(145) a. If you intend to get good grades, you have to study.
    b. ≈ You have to study to get good grades.
(146) a. If you believe (you will bring it about that) you will get good grades, you have to study.
    b. ⊳ You have to study to get good grades.

While this paper has adopted a particular approach to intention reports and a particular approach to anankastic conditionals that together make sense of the contrast in (145)–(146), the problem (145)–(146) poses for Pearson’s analysis of intention reports does not depend on any particular analysis of anankastic conditionals. For

19I thank an anonymous reviewer for help with the phrasing of the examples in (141)–(142).
example, an anonymous reviewer suggests that there is no important semantic connection between effective preferences and anankastic conditionals and that instead, the availability of an anankastic interpretation depends on whether a goal is made salient, something intention reports readily do but belief reports ordinarily do not. In section 3.2.5 above I made the case that there is a tight connection between anankastic conditionals and effective preferences, but suppose for the sake of argument that the reviewer is correct. It seems to me that the Pearson-style account would still face a difficulty in trying to make sense of why a belief that one will intentionally bring something about does not make a goal salient whereas an intention report does make a goal salient.

8 Conclusions and outlook

This paper started out with the goal of understanding the analytical relationship that intention reports bear to other attitude reports and to other expressions that have to do with intentional action. In a nutshell, the proposal that we ended up with says that intention reports are similar to desire reports in the sense that they are built on preference structures. But unlike ordinary desire reports, intention reports exclusively target effective preference structures, thereby subjecting them to certain rationality constraints that ally them in some ways to belief reports. Furthermore, intention reports make use of the RESP-relation, just like other expressions that involve intentional action.

I will close with what I see as an important question raised by this analysis, a question that I think could fruitfully guide further investigation. Focusing just on the relationship between want and intend, one way of summarizing the core proposals of this paper is as indicated in the table in (147). The two predicates differ along three dimensions: want has an underspecified preference structure whereas intend targets effective preferences; want does not involve the RESP-relation whereas intend does; and want is gradable whereas intend is not.

(147)

<table>
<thead>
<tr>
<th></th>
<th>preference structure?</th>
<th>RESP-inducing?</th>
<th>gradable?</th>
<th>underspecified</th>
<th>effective</th>
<th>yes</th>
<th>no</th>
</tr>
</thead>
<tbody>
<tr>
<td>want</td>
<td></td>
<td></td>
<td></td>
<td>yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>intend</td>
<td></td>
<td></td>
<td></td>
<td>no</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notably, nothing in the analysis I have presented ties any of these properties together in a fundamental way; that is, the theory allows for all logically possible combinations of these three dimensions. This yields a typology of eight kinds of possible predicates (possibly more, if there are other kinds of options for the preference structure, as suggested in section 3.2.5 above). It is tempting to see this as
a shortcoming of the analysis and to try derive these particular clusterings of properties from deeper principles (as I gestured at in section 3.2.6 when I entertained the idea that there is indeed a natural intuitive link between effective preferences and responsibility). But I think that such a theoretical exercise would be premature, because we do not actually know a priori whether the other six kinds of predicates allowed by the theory exist or not.

As discussed in section 3.2.5 above, prototypical anankastic conditionals arise only when the antecedent of the conditional explicitly names an effective preference. So one way we could approach the question of possible clusterings of properties is by investigating whether, when want is put in this context which forces an effective preference construal, it becomes RESP-inducing and non-gradable. If it did, this would be a compelling reason for thinking that the three dimensions in (147) are deeply correlated. The contrast between (148)–(149) suggests that want is indeed RESP-inducing when it has the effective preference construal: it gives rise to the causation effect when an anankastic reading is salient (148), but not when an anankastic reading is not salient (149). (The validity of the paraphrase in (148b) depends on a very weak reading of bring it about that: help would be much more natural here. But the crucial point is that there is a contrast with (149b), which is intuitively not a valid paraphrase regardless of how weakly the causative is construed.)

(148) a. If you want your daughter to get good grades, you have to tutor her.
    b. ≈ If you want to bring it about that your daughter gets good grades, you have to tutor her.

(149) a. If you want your daughter to get bad grades, you have to reexamine your approach to parenting.
    b. ̸≈ If you want to bring it about that your daughter gets bad grades, you have to reexamine your approach to parenting.

As for gradability, the following data show that at least some gradability-inducing constructions sound odd with effective-preference want, though the judgments are subtle and it is difficult to abstract away from potentially interfering pragmatic factors.

(150) a. ?If you want very much to get good grades, you have to study.
    b. ̸?If you want to get good grades more than you want to have fun, you

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20I use the hedge “prototypical” here because as discussed in section 3.2.5, anankastic-like readings are also available in the absence of an effective preference in the antecedent. But crucially, this is possible only when a goal (effective preference) is pragmatically salient. So it is important to note that all the anankastic conditionals to be considered in what follows are of the sort that do not require such contextual enrichment; the goal is made explicit in the antecedent.
have to study.

So the foregoing considerations suggest that there is indeed a non-trivial relationship between effective preferences, responsibility, and (maybe) non-gradability. But on the other hand, we also identified in section 6 above the predicate count on, which seems to name effective preferences without being RESP-inducing. (151) shows that count on supports anankastic readings of conditionals; this establishes that it at least has the option of targeting effective preferences. And it seems plausible to entertain the stronger view that like intend, it targets effective preferences exclusively, given that it obeys realism (152a), conjunction introduction (152b), and upward monotonicity (152c). But as witnessed in (153)–(154), count on does not give rise to responsibility effects. So perhaps, the connection between effective preferences and the RESP-relation is not so deep after all.

(151) a. If you count on getting good grades, you have to study.  
b. ≈ You have to study in order to get good grades.

(152) a. #John counts on turning into a unicorn, even though he knows this is impossible.  
b. #John counts on staying at home tonight but he also counts on going out tonight.  
c. #John counts on teaching Tuesdays and Thursdays next semester, but he doesn’t count on teaching next semester.

(153) a. John counts on Bill getting good grades.  
b. ¬ John counts on bringing it about that Bill get good grades.

(154) a. John counts on breaking the window unintentionally.  
b. John counts on breaking the window intentionally.  
c. John counts on going through puberty next year.

Clearly, these remarks only scratch the surface of what could be a much more detailed investigation of which clusters of properties are attested in natural language attitude predicates and which are not. I merely hope to have provided a suitable foundation for such a line of inquiry.

References


