

5VNPS (FOPNJD 1SPGJMJOH 3FQPSUT GSPN %J
XJUI 3FTQFDU UP \$MJOJDBM "DUJPO "CJMJUZF

<XULNR 0SEVWRMHQVRQ DQG -HIIUH\ 2WWR
&+, ,QVWLWXWH IRU 5HVHDFK DQG ,QQRYDWLRQ &HQWHU IRU 7UDQVODWLRQDO 5HVHDFK %DOWLPRUH
&RUUHVSRRGLQJDXMKRORUL &+, ,QVWLWXWH IRU 5HVHDFK DQG ,QQRYDWLRQ &HQWHU IRU 7UDQVODWLRQDO
(PDLO <XULNRORUL#JPDLO FRP

5HF GDWH -XO\$FF GDWH \$XJ 3XE GDWH \$XJ
&RSULJKW < ORUL < HW DO 7KLV LV DQ RSHQ DFFHVV DUWLFOH GLVWULEXWHG XQGHU WKH WHUPV
GLVWULEXWLRQ DQG UHSURGXFWRQ LQ DQ\ PHGLXP SURYLGHG WKH RULJLQDO DXWKRU DQG VRXUFH D
SDUWLFXODU SDWKZD\ DQG ZKDW F
EDV

\$EVWUDFW

%DFNJURXQGJHQHJUDWLRQ QFLQJ 1*6 RI VHOHFWHG JHQHV LV DQ H[SDQGLQJ I
FKDUDFWHUL]DWLRQ 0XOWLSOH YHQGRUV RIIHU WKLV VHU\LFH EXW SDQHO GH
YDULDEOH 7KLV VWXG\ FRPSDUHG UHSRUWV IURP VHOHFWHG YHQGRUV ZLWK HPS

0HWKRGRORJ\ '1\$ DOLT XRWV RI ILYH EUHDVW DQG ILYH FRORUHFWDQ FDQFHU
IROORZLQJ VROLG WXPUR 1*6 WHVWV)RXQGDWLRQ RQH70 6WUDQG\$GYDQWDJH
LQWHUSUHWHLYH UHSRUWV ZHUH FRPSDUHG IRU WKH UHSRUWLQJ RI FOLQLFDQ\ DF

5HVXOWV 'HWHFWLRQ RI PXWDQWV ZDV PRVWO\ FRQVLVWHQW RI FRQR
YDULDQWV ZDV KLJKO\ GLVFRUGDQW RI FRQRUGDQW 'LVFRUGDQFH RI
SULPDULO\ GXH WR GLIIHUHQFH LQ DQDO\WLFDO VHQVLWLYLW\ \$FWLRQDEOH YDUL
WXPUR W\SH ZHUH GHWHFWHG DQG LQWHUSUHWHG XQLRUPO\ E\ DOO WHVWV 5HS
YDULDEOH ODUJHO\ GXH WR GLIIHUHQFH LQ SDQHO GHVLJQ DQG DQDO\WLFDO V
DQQRWDWLRQ SROLFLHV \$FWLRQDEOH YDULDQW UHSRUWLQJ E\)RXQGDWLRQ RQ
WDUJHWHG WKHUDSLHV ZKLOH VWUDQG DGYDQWDJH XQLTXHO\ FRYHUHG FKHPRW
SURYLGHG PRGHUWH FRYHUDJH RI FOLQLFDQ WULDOV GHVSLWH LWV VPDOO JHQ
)RXQGDWLRQ RQH DQG 6WUDQG\$GYDQWDJH SDQHO ZDV QRW HYLGHQW GXH WR WK

KRZ WR LQWHUSUHW WKH RQFRJHQFLW\ RI D YDULDQW RU LWV DELOLW\ WR DF

G RQ OLWHUDWXUH DVVHVPHQW

'LvhUHJHQGRU GLVFRUGDQW FHV DORQJ HDF
GLPHQLRU LQVWDQFH VRPH YHQGRUV X
XS WR DSSUR[LPDW\KRRVHQJHWR VHTX
PXDWLRQ KRWVSRW UHJLRQV LQ WKHVH JH
KXQGUHGV RI JHQHV FKRRVLQJ WR VHTXH
XVH WKH ,OOXPLQD SODWIRUP RWKHUV W
\HW RWKHUV WKH 5RFKH SODWIRUP 6H
YDULDQW}FOLQLFDQWLRQV DQG WUDQVORF
GHSMRQZWKH~RSZVWUHDQ RI VHG\HQLRQW
DPSOLFR

&LWDWDRQL < /HYHQVRQ 9 2WWR - 7XPRU *HQRPLF 3URILOLQJ 5HSRUWV IURP 'LIIHU
\$FWLRQ \$ELOLW\ RI WKH 3URYLGHG 'DWD \$GY 0RO 'LDJ '2,

3DJH RI

KDQGRHODKMBgRI)RRG DQG 'UXJ \$GPLYDQWUHGZLWLRQDOLSHG DSDWKRORJLFDQ GD
DSSURYHG GUXJV HWF YHQGRSHFL}SOWRQXJK))3(WLVVXH ZDV

*LYHQ WKLW SOHWKRUD RI FKRLFHV YXEPVVLRO IRUPDW IRU DOO YHQGRUV
WKHVH FRHLEMMQDHSRUW WKDW DQ RQWLDORJLWXSUWQRUGRUWXR XGSHUWHLQDWHG
WKH FDVH DW KDQG 'R WKH FOLQLFDQ YHFWLRQWYOHFHDOGHVVRU GGLWHRDOO
YDU\ ZLGHQ\ EDVHG RQ WKHVH FKRLFHV YHFWLRQWYOHFHDOGHVVRU GGLWHRDOO
LUUHVSHFWLYH RI WKHVH FKRLFHV" 7R WKHLEH*VW RYDNRZDOLW\FRQWURO
EHHQ D IRUPDO VWXG\ DGGUHVVLQJ WKLW RYDNRZDOLW\FRQWURO
DQDO\VLV RI FOLQLFDQ UHSRUWV IRU VWDUHQHDFK YHQGRUDV SUDFWLFHOLWLRQ
KDYH SDGHUHFQWVHV LQ GHVLSQRQDOLW\WDUHQHDFK YHQGRUDV SUDFWLFHOLWLRQ
DQG WKH VXEVHTXHQW LQWHUSUHWDWLRQDQG UHSRUWV SURWRFROV

0DWHULDQV DQG 0HWKRGV

&OLQLFDQ VDPSONV DQG '1\$

'H LGHQWLYFBOLOSDUHQ HPEHGGHXPBRU
WLVVXHV IURP &5& &RORUHFWDQ &DUFORPD DQG KRUPRQH UHFHSWRU
&+5 QHJDWLYH EUHDV FDQFHU %& IURP HXKRIRGWDZHQFRWVWKHG&DFURVV
&HQWHU IRU WUDQVODWLRQDO UHVHDUFKZHUHQFKRVLQDOLW\WKHVLWQSEOHQDOLW
%& VDPSONV ZDV WULSOH QHJDWLYH EHXHUWDLQDOLW\ZHUHQFKRVLQDOLW
GHPRQVWUDWHG WXPRU FHOOLSHUHFQWZDWHVJRUHQWHU WKDQ
FRQGXFWHG XQGHU D SURWRFRO DSSURYHG E\ :HVWHUQ QVWLWXWLRQDO 5HYLHZ
%RDUG 3X\DOOX\$:\$:ULWWHQ FRQVHQWDLQGHG IURP DOO SDWLFHQWV
'1\$ ZDV H[WUDFWHG IURP WKH VDPSONV DW WKH &75 0ROHFXODU 'LDJQRVWL
/DERUDWRU\ XVLQJ WKH 4LD\$PS))3('1\$DULYDQWLRQDOLW\LDWHU
*HUPDQ\ ZLWKRHW HXKRIRGWHVWHLQSDUHQHDFK YHQGRUDV SUDFWLFHOLWLRQ
IRU TXDOLW\ E\ XVLQJ 1DQR'URSHUPRVSHFWURSKRWRPHWU
6FLHQW\DFLQJWRQ '(DQG IRU GRXEORVWUDQGHG VWDUHQHDFK YHQGRUDV SUDFWLFHOLWLRQ
FRQFHQWUDWRQ E\ XPRUHQWVHG 4XELDOLWQV FRQWUROVFLW\ RI FKHPRV
GV'1\$ +6 DVVD\ NLW LELG LQ RUGHUWDLRKHUHQHDFK YHQGRUDV SUDFWLFHOLWLRQ
TXDOLW\ VWDQGDUG WKDW ZHUH UHTXHVHG E\ HDFK YHQGRU 2QFH
PHDVXUHPHQWV ZHUH FRPSOHWHG '1\$ ZHUH DOLTXRW DQG WWRUHG XGHWG IURP
r& XQWLO VKLSPHQW YHQGRUV GHVLSQRQDOLW\WKH VLJQDWHU

1*6 DVVD\

H IROORZLQJ IRXU WHVWV ZHUH XVHG H YDULDQW DQG WKHLU DFWLRQ DEL
H)RXQGDWLRQ RQH JHQ SDQHO IURP WKH RYDNRZDOLW\WKH VLJQDWHU DELOLW\
&DPEULGJH 0\$ FRPSULVHV JHQHV SURZHUGDVPURQDQGRIGHWVHG QDUU
LQYROYHG LQ UHVLVWQJFKRVLQDOLW\DWLRQDOLW\SSGXUDJH DQRWDWLRQV
SDQHO ZLWK VHTXHQLQJ SHUIRUPHG RUDWKHQDOLW\SDUHQHDFK YHQGRUDV SUDFWLFHOLWLRQ
H &\$1&3 SDQHO IURP WKH 0DIR 0HGLFDQWDLRWHV DSSUBDGH WXPRU WIS
&OLQLF 5RFKHVWHU 01 KDV JHQHV DVVWJGHG3&5 EDWHLUWDFEGLQJ WR V
KRWVSRW SDQHO ZLWK VHTXHQLQJ SHUIRUPHG RYDNRZDOLW\WKH VLJQDWHU
,RQ 3*0 SODWIRUP 8QOLNH RWKHU WHVWV &\$1&3 GRHVQW DVVHVY &R\$
1XPEHU 9DULDWLRQ &19 SXUSRVH RI FRPSDULVRQ

H *HQH7UDLOV VROLG WXPRU SDQHO IURP WKH .QLJKW 'LDJQRVWL
/DERUDWRU\ DW WKH 2UHJRQ +HDOWH5HQXQFH 8QLYHUVLW\ 3RUWODQG
25 KDV JHQHVD 3&5 EDVHG DPSOLFRQ VHTXHQLQJ SDQHO
VHTXHQLFHG RQ WKH /LIH 7HFKQRORJLHV RQ 3*0 SODWIRUP
&KDUDFWHULWLVV RI UHSRUWV

H 6WUDQGSYDQWJH SDQHO IURP 6WUDQGSYDQW *HQRPLF QF \$XURD
&2 FRPSULVHV JHQHV DQG UHUUHQHDFK YHQGRUDV SUDFWLFHOLWLRQ
5(7 JHQHWLV DOVR D KIEULGLDWLRQ EDVHGFDVXUHQSDQHO VFKDQV
VHTXHQLFHG RQ DQ ,OXPLOH SODWIRUP QVWURO VFKDQV VDPSONV H[
GXULQJ VKLSPHQW 7DEOH VKRZV VDPSONV

7DUJHWV DVVHVHG E\ HDFK WHVW DUHQDOLW\WDLRQ VSSOHPHQWU\ 7DEOH
IURJHQ '1\$ DOLTXRW SHU VDPSONV ZDV VKLSSHG RXW WR HDFK VHTXHQLFHG

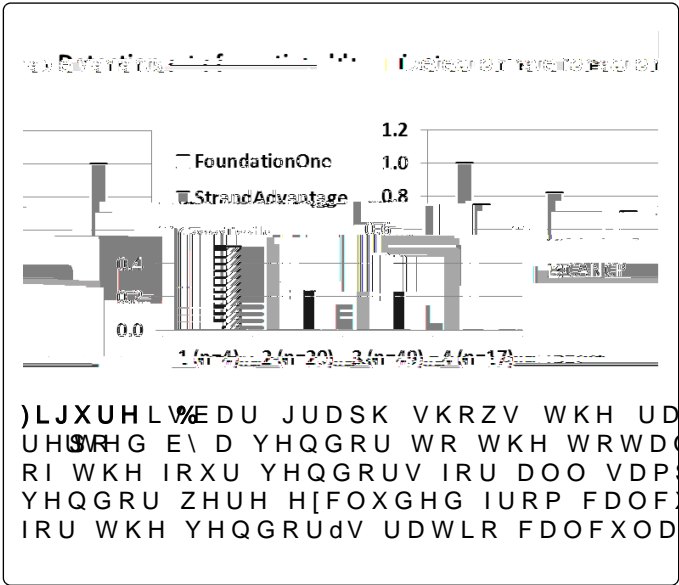
&5&	.5\$6 S *O\ \$VS 3.. &\$ S \$VQ 6HU, 3.. 5 S /V *OX ,,,	.5\$6,, S *O\ \$VS , , , S \$UJ ; S 5 ,9 ;5&8, S *OQ \$UJ ,9	.5\$6 \$\$&O\ \$VS 3.. &\$ S \$VQ 6HU , , , 3.. 5 S /V *OX , , , 73 GHOWLRQ	.5\$6,S *O\ \$VS , , ,	
&5&	1R 5HSRUW	0725 S *OX /V S 7KUIR 5HSRUW ,, .5\$\$ \$OD 7KU , , , \$3& S 7KU *OQIV; S *OQ ; S \$UJ ; ,9	1R 5HSRUW	1R 5HSRUW	
71%&	127&+ S \$UJ ; S 7US ; ,,,	\$. 73 DPSOLILFDWLRQ DPSOLILFDWLRQ 0,<& DPSOLILFDWLRQ , , , ,9 \$%&& F 7!& ,9	73,,S 7U5\$6; , , , 73 S 7US ;	1R DFWLRQDEOH YDU	
71%&	3.. &\$ S \$VQ , , , ,37(1 S *O\ \$VS , , , , &' DPSOLILFDWLRQHW 9DO , , , 73 S 7U ; , , ,	37(1 S *O\ \$VS , , , S 7U ; ,9 \$%&& F 7!& , , , , &' DPSOLILFDWLRQHW 9DO ,9	37(17\$ *O\ \$VS , , , , , , 73 S 7U ;	1R DFWLRQDE	
71%&)*)5 DPSOLILFDWLRQ5HSRUW, &&1' DPSOLILFDWLRQ , , , &&1(DPSOLILFDWLRQ % ,ORVV , , , 0<& DPSOLILFDWLRQ , , , 0<&/ DPSOLILFDWLRQ , , , 73 S 9DO IV; , , ,)*)5 DPSOLILFDWLRQ5HSRUW, , , , &'1 \$ % ORVV 73 S 9DO IV; , , ,)*)5 DPSOLILFDWLRQ5HSRUW, , , , &'1 \$ % ORVV 73 S 9DO IV; , , ,	1R DFWLRQDEOH YDU	
71%&	\$.7 DPSOLILFDWLRQ5HSRUW, , , , , 73 S *OQ	\$.7 DPSOLILFDWLRQ5HSRUW, , , , , 73 S *OQ , , , , 175. DPSOLILFDWLRQV , , , , , , , 0(7 , , , , 602 , , , , 175. DPSOLILFDWLRQV , , , , , , , 0(7 , , , , 602 , , , , 175. DPSOLILFDWLRQV , , , , , , , 0(7 , , , , 602	1R)5HSRUW , , , , 175. DPSOLILFDWLRQV , , , , , , , 0(7 , , , , 602 , , , , 175. DPSOLILFDWLRQV , , , , , , , 0(7 , , , , 602	1R DFWLRQDEOH YDU	
+5 +(5 %&	(5% DPSOLILFDWLRQ5HSRUW, 3.. &\$ S &V \$UJ, , , , \$85.\$ DPSOLILFDWLRQ , , , %\$5' S /V IV; , , , *1\$6 DPSOLILFDWLRQ , , , 0<& DPSOLILFDWLRQ , , , 723 \$ DPSOLILFDWLRQ , , ,	(5% DPSOLILFDWLRQ5HSRUW, 3.. &\$ S &V \$UJ, , , , \$85.\$ DPSOLILFDWLRQ , , , %\$5' S /V IV; , , , *1\$6 DPSOLILFDWLRQ , , , 0<& DPSOLILFDWLRQ , , , 723 \$ DPSOLILFDWLRQ , , ,	(5% DPSOLILFDWLRQ5HSRUW, 3.. &\$ S &V \$UJ, , , , \$85.\$ DPSOLILFDWLRQ , , , %\$5' S /V IV; , , , *1\$6 DPSOLILFDWLRQ , , , 0<& DPSOLILFDWLRQ , , , 723 \$ DPSOLILFDWLRQ , , ,	1R)5HSRUW , , , , 175. DPSOLILFDWLRQV , , , , , , , 0(7 , , , , 602 , , , , 175. DPSOLILFDWLRQV , , , , , , , 0(7 , , , , 602	1R DFWLRQDEOH YDU

5RPDQ QXPEHUV LQGLFDWH WKH IROORZLQJ \$FWLRQ DELOLW\ DQQRWDWLRQ
 , DUJHWHG WKHUDS\ DSSURYHG LQ WKH VDPH WXPURU WISH , , 7DUJHWHG WKHUDS\ DSSURYHG LQ DO
 5DGLRWKHUDES\ HIILFD\ RU WR[LFLW\ , , , 7DUJHWHG WKHUDS\ DSSURYHG EXW DSSURYHG WXPURU WIS
 OLWHUDWXUH UHYLHZ 7KH \$FWLRQ DELOLW\ DQQRWDWLRQV LQ VXPDU DQG QDUUDWLYH DUH GLVFU
 FKDUDFWHULJHG , QDGHDXWH FDWHJRU\ ODEHO RI (YHUOLPXV FDWHJRU\ , IRU 71%& ZKLFK LV DSS
 FDWHJRU\ , , *HQH7UDLOV UHSRUWHG 73 S < ; LQ DV QRQ DFWLRQDEOH FOLQLFDOO\ VLJQLILF
 71%&V DV DFWLRQDEOH

7DEOH DULDQWV UHSRUWHG DV FOLQLFDOO\ DFWLRQDEOH LQ HDFK UHSRUW
 LV WDEOH GRHVQdW LQFOXGH YDULDQWV UHSRUWHG DFWLRQDEOH LQ DV DQQRWDW
 DFWLRQDEOH 73 IRU VWDJH , \$ 71%&V L H FDWHJRU\
 DQG YHUXXV QRQ DFWLRQDEOH LQ VDPH
 'HWDLOHG UHYLHZ UHYHDOHG VRPH DSSDUHQW HUURUV LQ UHSRUW LQ VDPH
 7DEOH VSRUWHFHQWV 'LVFUHSDQF\ ZDYRQRWHG VLXEVHTXHHQDO DQDO\HVH ZH FI
 DQQRWDWLRQV LQ DQQRWDWLRQV XPPDU\ WDEOH DQQRWDWLRQV LQ WKH UHSRUW WR V
 RI)RXQGDWLRQ RQH UHSRUW L H fdfwlrqdeoh qdwdwlrqdeoh qdwdwlrqdeoh qdwdwlrqdeoh
 UHSRUWHG KHUH KDV QRW EHQG FKDUDFWHULJHG WRLFK ERQV LQ DQQRWDWLRQV LQ
 LQ QDUUDWLYH IRU 602 S \$OD 9DO WKH \$HQG \$RO dv6HWDDGLQ\$ DW WKH WLPH
 S \$VQ IV; DQG 37(1 S V)QGL\$V\$KW LPSO\
 WKDW)RXQGDWLRQ RQH PD\ QRW DQDWDW WIRQGHV WIRQGHV WIRQGHV WIRQGHV WIRQGHV
 FKDUDFWHULJHG YDULDQWV SULRU WR FRQVLGHU FOLQLFDO DFWLRQ DELOLW
)RXQGDWLRQ RQH DOVR PLVODEHOONG 6LWKHYDULBSVURZH UHSRUWHG DV FO
 (YHUOLPXV DV DSSURYHG LQ 71%& LQ HWZR LQ WKH WIRQGHV WIRQGHV WIRQGHV WIRQGHV
 FDWHJRU\ , GHVSLWH LW EHLQJ DSSURYHG RQH IRU \$ 450E UHYLHZ WKDW
 FDQFHUV \$FWLRQ DELOLW\ FDWHJRU\ EDVHG RQ WKH \$HQG \$RO DV6HWDDGLQ\$ DW WKH WLPH
 GUXJVDWIGDBGRFV QGD 2ULJ V DULS QW *HQH7UDLOV HYG QWV PHW WKLV

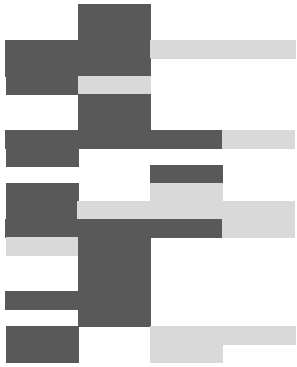
DVVD\HG DQGHUHQMLFDO \$FWLRQ DQ'ISODLSUFDYCHGRWDWJLRQHG WKHUDS\ IRU RV
)XWUPRUH DV ZDV PHQWLRQHG HDUOLKILU KILUW)FDXOG DMQGRUR QFR XCOGG D8/WHDQ GSO
 VDPSOHV GXH WR VDPSOH H[KDXVWLRQ)RQ LQDFWGRQWRQBXKDQJWKHL SPHQWVWZKUFIS
 LPSDFWHG QXPEHUV RI WKH GHWHFWHGDELOLDQWVHG \$FH KGLW\ K

,Q RUGHU WR HOLPLQDWH WKH LPSDFW RI VDPSOHV WKDW ZHUH QRW DVVHVVHG
 E\ DSHFYHQGRU IURP WKLV DQDO\VLV ZH FDOFXODWHG WKH \$FWLRQ DELOLW\
 GHWRQWUDWH RI HDFK YHQGRU UHODWLYH WR WRWDO \$FWLRQ DELOLW\ GHWHFWH
 DOO YHQGRUV LQ WKH VDPSOHV WKDW WKH YHQGRU FRXOG UHSRUW)LJXUH %



)LJXUHL%EDU JUDSK VKRZV WKH UDWLR RI DFWLRQDEOH YDULDQWV
 UHSRWHG E\ D YHQGRU WR WKH WRWDO DFWLRQDEOH YDULDQWV UHSRUWHG E\ DQ\
 RI WKH IRXU YHQGRUV IRU DOO VDPSOHV 6DPSOH WKDW ZDVQdW DVVHVVHG E\ D
 YHQGRU ZHUH H[FOXGHG IURP FDOFXODWLRQ RI WKH WRWDO QXPEHU DSSOLHG
 IRU WKH YHQGRUV UDWLR FDOFXODWLRQ

\$WUVWDQFH FDWHJRU\ , \$FWLRQ DELOLW\)' DSSURYHG WDUJHHWG
 WKHUDS WKH VDPH WXPRU W\SH UHSRUWLQJ ZDV FRPSDUDEOH IRU DOO
 YHQGRUV UHJDUGOHVV RI WKH SDQHO VL]H &\$1&3 UHSRUWHG DFWLRQDEOH
 YDULDQWV RQO\ LQ WKLV FDWHJRU\ &DWHJRU\ , , \$FWLRQ DELOLW\ UHSRUWLQJ



&19 RI &'. 0<&/ DQG &&1' DV ZHOO DV 37(1 LQWURQ
UH DUUDQJH RUCR UW DOVR LQGLFDWHG SRVLEOH WDUJHWHG WKHUDS\
FOLQLFDO WULDOV H[FHSW IRU 37&+ ZKHUH WDUJHWHG WKHUDS\ ZDV DSSURYH
IRU DQRWKHU WXPRU W\SH 6L[YDULDQWV ZHUH UHSRUWHG IRU WDUJHWV DVVHV

UHVSRQVHWRXUDFLOLWK DGGLWLRQDO SUHFOLQLFDO HYLGHQFH WR
WKLWHFW

2WKHU YDULDQWV ZLWK PDMRU GLVFRUGDQFH

H 127&+ WUXQFDWLRQ YDULDQW S \$UJ ; ZDV GHWHFWHG LQ
VDPSOH E\)RXQGDLRQ RQH DQG 6WUDQG\$GYDQWDJH ,W LV D
WUXQFDWLQJ PXWDWLRQ LQ D JHQH WKDW EHKDYHV ERWK DV D WXPUR VXSSUHV
DQG DV DQ RQFRJHQH > @ DQG KDV EHHQ UHSRUWHG DV DQ LQGLFDWRU RI
SRWHQWLDO UHVSRQVH WR 1RWFK LQKLELWRUV LQ FOLQLFDO WULDO E\)RXQGD
RQH DQG DV QRQ DFWLRQDEOH E\ 6WUDQG\$GYDQWDJH 6WUDQG\$GYDQWDJH
GLGQdW SURYLGH H[SODQDWRQ IRU WKLW GHVLJQDWRQ LQGLFDWLQJ WKDW
DQQRWDWHG WKLW YDULDQW DV 986)RXQGDWRQ RQH FLWHG D VWXG\ RI WKLW
YDULDQW VQRZLQWDFWLYHFWLQHO DV LWV FR
RFFX@

UHSRUWHG UHODWLYHO\ OHVV FOLQLFDO 'WUDDOUG\$FWLRQLDHELOELWALHRD 6W7DEHLS
SDQHO VL]H LQ SDUW GXH WR LWV DQQRWDBWLRQXPPELX)WKDWHLWFXIOWKHQGG5\$9
LQ WKH QH[W SDUDJUDSK 2I QRWH WKH D\VVHVHGHQJXPFG WISHV ZHUH QRW
WKRVL LQ ZKLFK JHQH UHUUUDQJHPHQW &KKBYH ODUJH6LPSDFW=RQ*XFWLRQK DQJ
DELOLW\ H J QRQ VPI DQIRWGH FOXUHQDQJ JHHSWRU 7 0 PXW DDISDQJ BDDGWRD RZLQH N
XQVXLWHG IRU IXOO HYDOXDWLRQ RI WKH YWLOLW\ RI WKH IRXQG DWLRQ RQH D
6WUDQG\$GYDQWDJH SDQHOVd UHUUUDQJHPHQW WDUJHW

%DVHG RQ WKH H[DPLQDWLRQWYUSUHQDWRQWK 2[QDUG *5 1DID . 5LHO\ *- 6R
VYHUDO LPSRUWDQW GLVWLQFWLRQV ZHUH QRWHG LQSRDFPHU SDWLHQWV ZDY
UHSRUWLQJ GHFLVLRQ WR UHSRUW)RXQGDWLRQ RQH DQG *HQH7UDLO RU QRW
6WUDQG\$GYDQWDJH YDULDQWV ZKHQ RQO\ SKDVH , WULDOV DUH DYDLODEOH
GHFLVLRQRW DUEFRUPW HQGDWLRQV LQ WKH DEVHQFH RI D WULDO
UHOHYDQW WR WKH WXPUR WISH)RXQGDWLRQ RQH RU QRW
6WUDQG\$GYDQWDJH GHFLVLRQ WR UHSRUW \$FWLRQ DELOLW\ VXSSRUWHG RQO\
SUHFOLQLFDO GDWD)RXQGDWLRQ RQH RU QRW 6WUDQG\$GYDQWDJH DQG
*HQH7UDLOV &\$1&3 GLGQVSHUFLSRQWFDQDWODDQOLW\ RI
DW DOO \$FFRUGLQJO\ 6WUDQG\$GYDQWDJH ZDV JHQHUDOO\ PRUH FRQVHUYDWLY
WKDQ RWKHU YHQGRUV LQ UHSRUWLQJ DYDLODEOH FOLQLFDO WULDOV WKXV V
FRYHUDJH RI FOLQLFDO WULDOV ZDV UHODWLYHO\ VPDOO IRU LWV SDQHO VL]H

\$QDO\WHDQDOWLYLWRIW\$XWDFWLRQ GHWHFWLRQ DSSHUHG
FRPSDUDEOH DPRQJ YHQGRUV ZKLOH &19 UHSRUWLQJ ZDV KLJKO\ YDULDEOH
H GLVHUHQFH UHSRUWLQJVDJFRYDQWGLORHV
SURYLGHG FOLQLFDOO\ DFWLRQDEOH LQIRUPDWLRQ 6WUDQG\$GYDQWDJH GHWHFW
PRUH FOLQLFDOO\ DFWLRQDEOH HQH7UDLOV GHWHFWHG
PRUH FOLQLFDOO\ DFWLRQDEOH GHOWLRQV WKDQ WKH RWKHU YHQGRUV ,W VK
EH QRWHG WKDW WKH YHUDFLW\ RHHLDQDOOV ZDV QRW LQGHSHQGHWO\
LQ RXU VWXG\ 9HQGRUV DUH HQFRXUDJHG WR SHUIRUP WKLV YDOLGDWLRQ RQ WK
RZQ ,W PD\ DOVR EH GHVLUDEOHVHWRVHQORS D FRQVHQQVXV LQ WKH
RI FOLQLFDOO\ LPSDFWIXO &19

5HSRUW IRUPDWV RI)RXQGDWLRQ RQH DQG 6WUDQG\$GYDQWDJH ZHUH WKH
PRVW FRPSUHKHQVLYH ZLWK VWDWHPHQW RI GUXJ)'\$ DSSURYDO VWDWXV
FOLQLFDO WULDO GHVFULSWLRQ DQG UHIHUHQFHV WR VXSSRUWLQJ OLWHUDWXU
YHQGRUV SURYLGHG FRQLVH VXPPDU\ IRU FRQYHQLHQFH EXW FDXWLRQ
VKRXOG QRQHWKHOHVV EH H[HUFLVHG IRU RFFDVLRQDO GLVFUHSDDQ\ EHWZHQQ
VXPPDU\ DQG QDUUDWLYH REVHUYHG LQ)RXQGDWLRQ RQH *HQH7UDLOV DQG
&\$1&3 KDG VKRUWHU UHSRUW IRUPDWV *HQH7UDLOV GLGQdW SURYLGH
OLWHUDWXUH LQIRUPDWLRQWKHFRPPHQGDWLRQ
UHTXLUH LQGHSHQGHW OLWHUDWXUH VHDFK &\$1&3 PHQWLRQH G RQJRLQJ
UHVHDFK ZLWK OLWHUDWXUH EXW ZLWKRXW LQIRUPDWLRQ RQ DYDLODELOLW\ I
VSHFGJFXJ RU D FOLQLFDO WULDO UHTXLULQJ DFWLYH OLWHUDWXUH GDWDEDV
VHDFK WR WDNH IXOO DGYDQWDJH RI WKH YDULDQW GDWD

\$OO WKH YHQGRUV FRQLQXH WR LPSURYH WKHLU UHSRUWV DQG JHQH SDQHO
FRQWHQWV VR WKH WUHQGV UHSRUWHG LQ RXU VWXG\ PD\ FDKQJH ,W LV FOH
WKRXJK WKDW VHTXHQLQJ PHWKRGV FKRLFH RI JHQHV ELRLQIRUPDWLFV
PHWKRGV DQG YDULDQW FXUDWLRQ DQG LQWHUSUHDWLRQ SROLFLHV ZLOO KD
PDMRU EHDULQJ RQ WKH DFFXUDF\ DQG QDWXUH RI UHSRUWLQJ /DUJHU VWXGLH
ZLOO EH QHHGHG WR TXDQWLROXW\HQFXGDQWVWLYH
DQG HYDQWVHWKIH SDWLHQW 6XFK ULJRURXV DQDO\VLV ZLOO QR
GRXEW LPSURYH WKH SUDFWLFH RI SUHFVLRQ PHGLFLQH LQ WKH IXWXUH

5HIHUHQFHV

/L^YUH \$ %DFKHV -% %RLJH 9 &D\UH \$ /H &RUUH ' HW DO .5\$6
PXWDWLRQV DV DQ LQGHSHQGHW SURJQRVWLF IDFWRU LQ SDWLHQWV ZLWK DGYDQFHG
FRORUHFWDQ FDQFHU WUHDWHG ZLWK FHWX[LPDE - &OLQ 2QFRO
\$PDGR 5* :ROI 0 3HHWHUV 0 9DQ &XWVHP (6LHQD 6 HW DO
:LOG WISH .5\$6 LV UHTXLULHG IROJ SDDQLHQWV XZLWK
PHWDVWDWLF FRORUHFWDQ FDQFHU - &OLQ 2QFRO

/HH 6< .XPDQR . 1DND]DNL . 6DQDGD 0 0DWVXPRWR \$ HW DO
*DLQ RI IXQFWLRQ PXWDWLRQV DQG FRS\ QXPEHU LQFUHDVHV RI 1RWFK LQ
GLVXOWDUJH % FHO O\PSKRPD &DQFHU 6FL
0DR -+ .LP ,- :X ' &OLPHQW - .DQJ +& HW DO)%:: WDUJHWV
P725 IRU GHJUDGDWLRQ DQG FRRSHUDWHV ZLWK 37(1 LQ WXPRU VXSSUHVVLQR
6FLHQFH
9LOODUX] /& 6RFLQVNL 0\$ 7HPVLUROLPXV WKHUDS\ LQ D SDWLHQW ZLWK
OXQJ DGHQRFDUFLQRPD KDUERULQJ DQ)%:: PXWDWLRQ /XQJ &DQFHU

-DUGLP '/ :KOHU -- +HV . 7VLPEHULGRX \$0 =LQQHU 5 HW DO
)%:: PXWDWLRQV LQ SDWLHQWV ZLWK DGYDQFHG FDQFHUV FOLQLFDO DQG
PROHFXODU FKDUFDWHULVWLFV DQG RXWFRPHV ZLWK P725 LQKLELWRUV 3/R6 2QH
H
'L 1LFRODQWRQLR) \$UHQD 6 7DEHUQHUR - *URVVR 6 0ROLQDUL) HW DO
'HUHJXODWLRQ RI WKH 3, . DQG .5\$6 VLJQDOLQJ SDWKZD\ LQ KXPQ
FDQFHU FHOV GHWHUPLQHV WKHLU UHVSQVH WR HYHUROLPXV - &OLQ ,QYHVW

*\PQRSRXORV 0 (OVOLJHU 0\$ FDRFMU3VSHFL}5DUH
PXWDWLRQV LQ 3, . &\$ VKRZ JDLQ RI IXQFWLRQ 3URF 1DWO \$FDG 6FL 86\$

+XDQJ &+ 0DQGHONHU ' 6FKPLGW .LWVOHU 2 6DPXHOV < 9HOFXOHVFX 9(
HW DO H VWUXFWXUH RI D KXPQ S DOSKD S DOSKD FRPSOH[
HOXFLGDWHV DFRJHQLF 3, .DOSKD PXWDWLRQV 6FLHQFH

&KHXQJ /: +HQQHVV\ %7 /L - <X 6 0\HUV \$3 HW DO +LJK
IUHTXHQF\ RI 3, . 5 DQG 3, . 5 PXWDWLRQV LQ HQGRPHWULDO FDQFHU
HOXFLGDWHV D QRYHO PHFKDQLVP IRU UHJXODWLRQ RI 37(1 SURWHLQ VWDELQW\
&DQFHU 'LVFHY
+DQ 6< .DWR + .DWR 6 6X]XNL 7 6KLEDWD + HW DO)XQFWLRQDO
HYDOXDWLRQ RI 37(1 PLVVHQVH PXWDWLRQV XVLQJ LQ YLWUR SKRVSKRLQRVLWLGH
SKRVSKDWDVH DVVD\ &DQFHU 5HV
5RGU`JXH] (VFXGHUR , 2OLYHU 0' \$QGU«V 3RQV \$ 0ROLQD 0 &LG 9- HW
DO \$ FRPSUHKHQVLYH IXQFWLRQDO DQDO\VLV RI 37(1 PXWDWLRQV
LPSOLFWDWLRQV LQ WXPRU DQG DXWLVP UHODWHG V\QGURPHV +XP 0RO *HQHW

*RQ]DOH] \$QJXOR \$0 %OXPHQ\CFKHLRQDUNHUV
WR SUHGLFW VHQVLWLYLW\ WR 3, . \$NW P725 SDWKZD\ LQKLELWRUV LQ EUHDVW
FDQFHU &DQFHU 7UHDW 5HY